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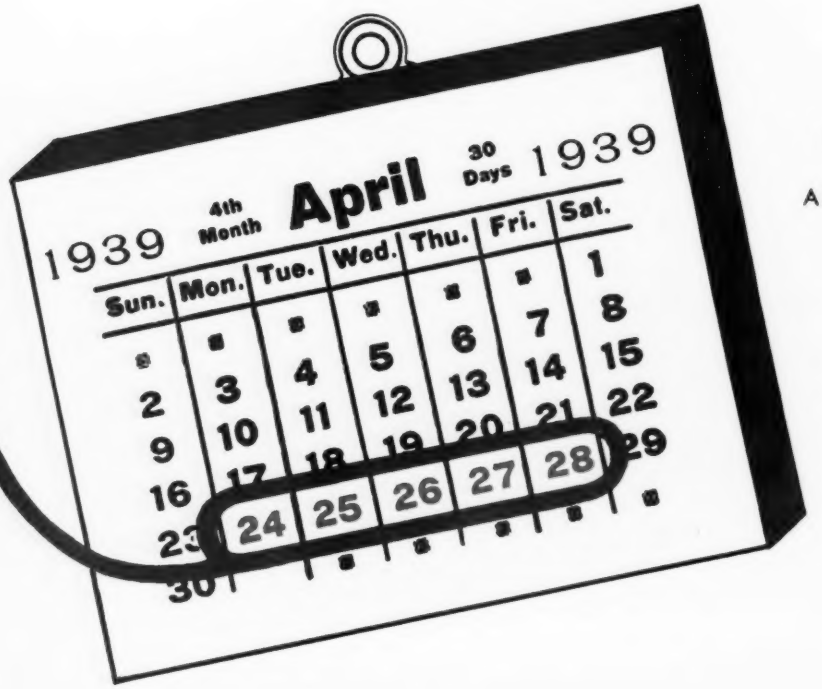

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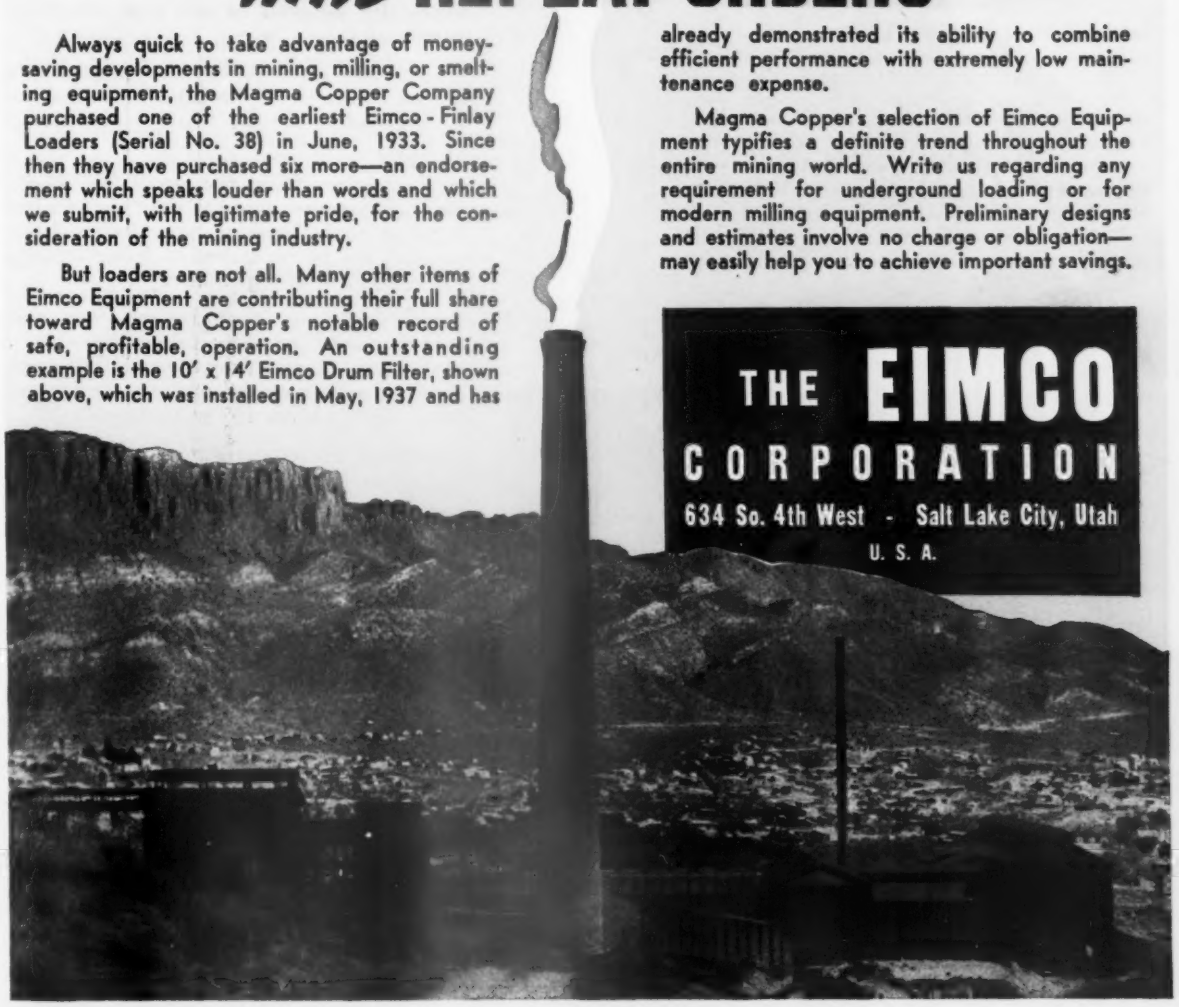

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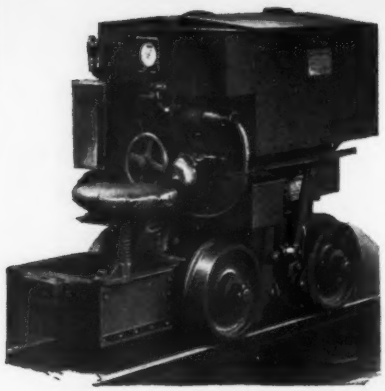
FOR DEPENDABLE AND ECONOMICAL SERVICE



Left: A Jeffrey 1½-ton Trammer locomotive, obtainable in battery, trolley or cable reel types. Compact design for easy handling in small cages . . . can operate in the smallest drifts and crosscuts.

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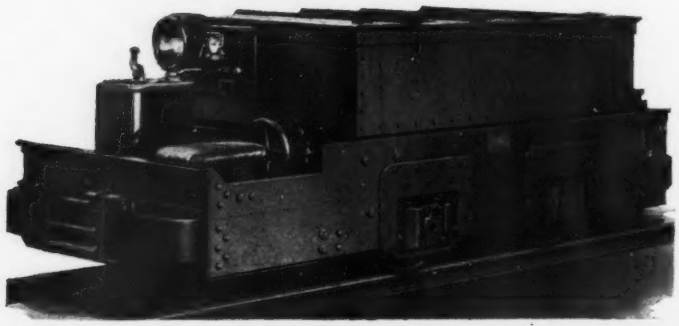
We invite you to communicate with us for full information on the Jeffrey line of locomotives for coal and metal mine service.



Left center: A Jeffrey 5-ton storage battery haulage locomotive. This unit is adaptable to narrow gauge track. Dimensions, control, make of batteries, type of couplers and bumpers, etc., can be arranged to suit practically any requirement.

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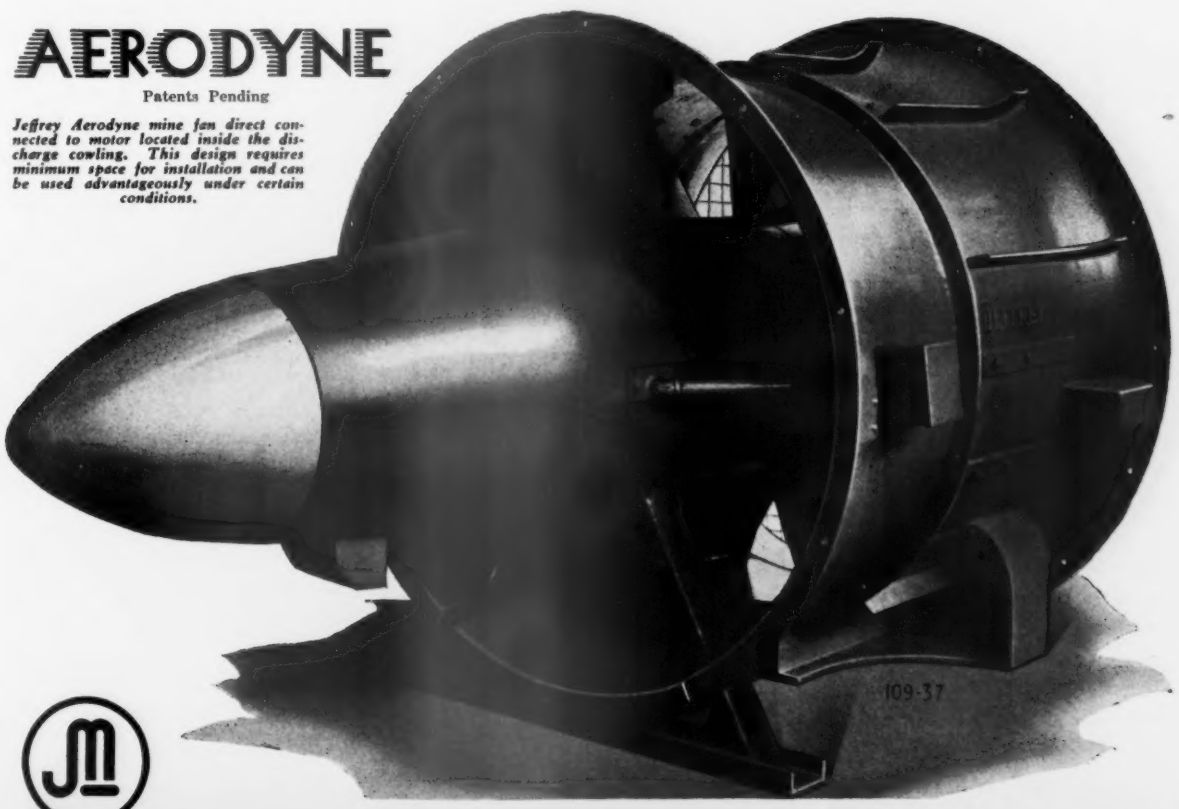
Jeffrey Aerodyne mine fan direct connected to motor located inside the discharge cowling. This design requires minimum space for installation and can be used advantageously under certain conditions.



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CORROSION is one of wire rope's greatest enemies. Unchecked, it will greatly shorten the useful life of a wire rope. It can easily reduce the safety of a wire rope to a point where further use of the rope is hazardous. Yet, to the eye, the rope may appear only slightly rusty—most of the damaging corrosion may be confined to the hidden inner wires.

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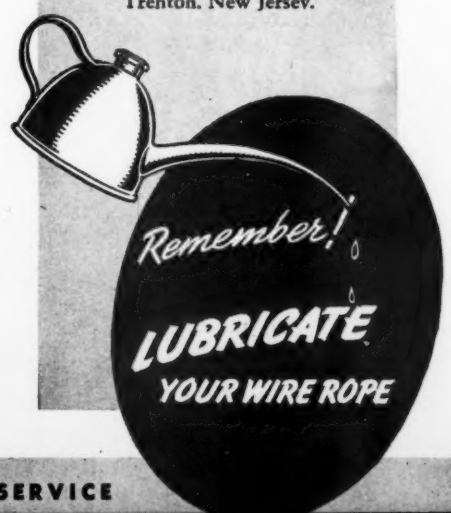
(1) Lubricate your wire ropes regularly; (2) with a lubricant especially made for wire rope application; (3) and suited to your own individual operating conditions.

This advertisement is published in the interest of all wire rope users, to help them obtain greater safety, service and efficiency from their wire rope.

For advice on wire rope lubrication

FOR further information regarding the proper lubrication of your wire ropes, consult the nearest Roebling branch office or our main office, Trenton, New Jersey.



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MINING CONGRESS JOURNAL

Vol. 25 MARCH, 1939 No. 3

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Only a little more than a month remains to plan your trip to Cincinnati for the 16th Annual Coal Convention and Exposition of the American Mining Congress.

Thousands of coal operators will be there to keep pace with progress in their industry by hearing authorities discuss vital problems facing them, and studying displays of machinery and equipment—needed in today's modern mine—to be seen at the Exposition.

WILL YOU BE ONE OF THEM?

See further details on page 44.

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Opinions expressed by authors within these pages are their own, and do not necessarily represent those of the American Mining Congress

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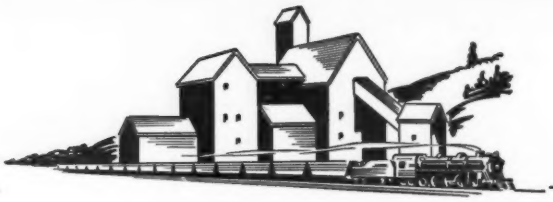


When Do We Stop?

JOBS for the jobless is the great problem confronting the American people today.

We have traveled so far away from individual and so far toward community responsibility, that new conditions have been created which must now control. If jobs are to be provided for the several million now unemployed in unproductive service and this plan is to be continued for any great length of time, the cost would be so great as to bankrupt not only the Public Treasury, but the ability of industry to provide jobs in the future.

Let us assume that there are but five million people who are thus unemployed. These, according to the present economic theorists, must be paid the going rate of wages established in each community. Mostly it may be said these wages are fixed by organized labor, but not less in any instance than 25 cents per hour. If forty hours' employment are provided it means ten dollars per week, and for five million workers fifty millions per week, or two and one-half billion dollars per year. This estimate is based upon the lowest number and the lowest wage.

With such a drain upon the power of industry to employ labor, how long will it take to exhaust its possibilities and force all workmen upon public pay rolls? If each year we take, by taxation, two and one-half billion dollars from the supply of liquid business capital and change it into dead capital, it will not take long to cripple the power of industry to provide employment.

By plowing in its profits legitimate industry continually increases its ability to employ more men, to pay higher wages and at the same time provide more of the necessities which the public needs and is willing and able to pay for. If those profits are absorbed by taxation there can be no increase in the facilities of employment. Wasting and unproductive efforts continually absorb surplus capital, and if continued any great length of time, they will entirely destroy the possibility of productive employment.

Jobs for the jobless, if furnished by the Government with the taxpayers' money, gradually absorb the employing capacity of industry, and more and more make public aid necessary. Emergency relief is justifiable, but alleged emergencies which continue for years are not emergencies. They are the result of political blundering which, if continued, will not only bankrupt the nation financially, but will destroy its morals and the independence of its individual parts.

Where do we stop and when?

J. F. Callbreath

A JOURNAL FOR THE ENTIRE MINING INDUSTRY—PUBLISHED BY THE AMERICAN MINING CONGRESS

MINING CONGRESS JOURNAL

Vol. 25 MARCH, 1939 No. 3

Richard J. Lund, Editor

THE COAL INDUSTRY AND ENERGY RESOURCE PLANNING

A PREVIEW of the future of energy resource industries, as seen by Washington planners, is outlined in the report "Energy Resources and National Policy" recently released by the National Resources Committee. Conservational aspects of coal, oil, gas and water power are outlined in considerable detail, and fields of remedy in a conservation program are described as seeming to lie (1) in promoting greater efficiency in the production of mineral fuels from the standpoint of recovery, (2) in promoting greater economy in the use of fuels and (3) in placing a larger share of the energy burden on lower grade fuels and water power.

Perhaps even more significant, however, is the full recognition of the intimate interlocking relationships between the several kinds of energy resources—thus necessitating what they term a broader and integrated national energy resources policy. By inference, this is a confession of the unfairness of regulating one of the energy resource industries if the others are allowed a more or less free rein. In this connection, the report states: "A policy for any one of these resources is bound to affect its relative position with respect to the others."

Many of the facts outlined in the report concerning the reasons for the long depression in the bituminous coal industry are indisputable. The "way out" is certainly not to be found, however, in the present policy of "holding the umbrella" over the uneconomic, high cost producers by means of higher minimum prices, on the one hand, and openly advocating and supporting expansion of cheap Federal hydroelectric power on the other. The former policy is bound to result in loss of further tonnage to competing fuels, and the latter has already displaced millions of tons of coal production and thousands of man-years of employment.

In discussing the development of great hydroelectric power projects, a most pertinent statement is made, as follows:

"Hydroelectric generating costs are governed largely by the rate of interest while fuel-electric generating costs are governed largely by the compensation of labor necessary to operate the plant and produce the fuel."

A little later it is pointed out that items subject to change, which might bring further hydroelectric power projects into economic feasibility, comprise the interest rate, the cost of labor and the cost of fuel. Thus, by implication, raising of minimum coal prices under Federal regulation may very well result in changing a number of pending hydroelectric power projects from the uneconomic to the economic class, and, if constructed in accordance with the contemplated program, further demoralize coal markets.

It is heartening to note that in discussing the functions and future of Federal regulation of the coal industry, appropriate recognition to the importance of marketing agencies is given, as follows:

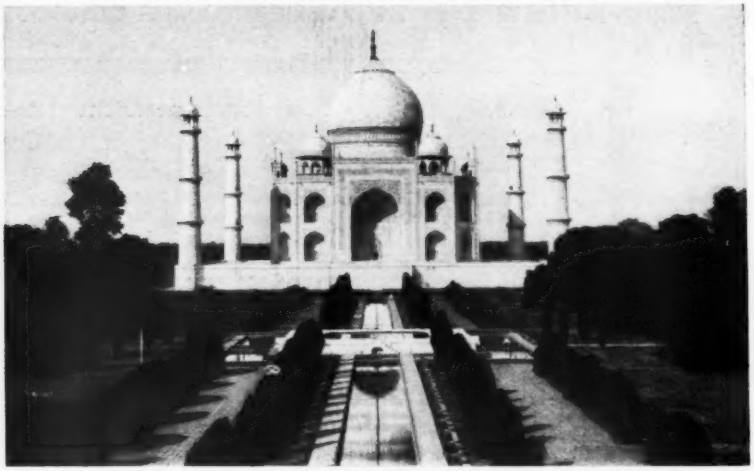
"If British experience is any guide, this provision for marketing agencies is likely to prove one of the most constructive features of the Act."

A little later the report states:

"The Act, therefore, contains its own provisions for evolution, should experience under the structure of minimum prices, when established, make some modification of the primary system of price control desirable."

Sentiment among operators is growing (see page 48) that price fixing provisions of the Bituminous Coal Act of 1937 are unworkable, and that salvation of the industry lies in expansion and more effective functioning of marketing agencies under supervision of some regular department of the government.

The argument is strong that a fair testing of minimum prices should be made before abandoning the principle in favor of something else —but extended delay in their promulgation (it now appears as though it may be as late as September before they go into effect) is proving a costly handicap to producers. Energy resource industries are thoroughly qualified to carry on their business without major Federal intervention, and they should be permitted so to do; however, if there is to be a planned and administered policy with respect to any one of them, it is imperative that some type of control measures be applied to all as a fair basis of protection.



Typifying Indian beauties—the Taj Mahal at Agra

COAL in INDIA

● ***Reserves Are Tremendous, But High Grade Deposits Are Limited. Many Problems Similar to Those Faced by Coal Industry in U. S.***

By JOHN C. COSGROVE
Consulting Engineer
Johnstown, Pa.

EARLY last year, accompanied by Mrs. Cosgrove, I sailed from New York on the S.S. *Franconia* and in due course, after visiting Brazil and South Africa, we arrived at Bombay, India. While my trip was not for the purpose of making an investigation into mining or the coal business of India, my natural interest led me to make various inquiries through which I learned a great deal about it.

India is so large, containing almost two million square miles and about one-fifth of the world's population, that it is impossible to give a really intelligent thumbnail sketch of the country. Nearly everything in it is on so large a plan that by comparison other countries seem dwarfed. Not only has India more languages and more races, more gods and more thieves, more philosophers and more agitators, but she seems to have more of everything else, including what might be termed professional criminals. The caste system, which separates the population of the country into very definite divisions which no one can cross, also places the professional criminals in a separate class. They have their own separate caste which is said to contain ten million cheerful, unabashed thieves.

Caste System Outstanding Feature

The ship remained in the harbor of Bombay, which we made our headquarters in India, while we took a 2,000-mile trip into the interior. On this trip we saw everywhere evidences of the caste and religious systems of the Hindus, through the operation of which the people are prevented from ever rising above their environment. It is a great agricultural land, farmed by an extremely poor and half-starved looking people. Many of them seldom, if ever, see any money and I have read of men working all day raising water by man power to irrigate fields for the princely wages of 2 cents per day.

The color of the people of India runs the complete range from black to a light or dirty gray. Most of them, however, are very dark. The ancient Indians were from an Aryan tribe which migrated to India about 2000 B. C. When they arrived, they found a country of black people whom they absorbed or enslaved. There have been other invasions with the infusion of other blood, such as that of Alexander the Great, and later the Mohammedans, but they say that the Hindu religion absorbs and embraces all with which it comes in contact, so that the Hindu caste system seems to control everything, whether the people are Hindus, Buddhists or Mohammedans.

Have Mined Since Prehistoric Days

The early history of mining in India is hidden in antiquity. It probably started somewhere in the prehistoric past; certainly nowhere else on earth will one see the display of gold and silver that is in evidence on the arms, legs, in the noses and ears of the population. Frequently one Hindu woman will have 20 or 30 bracelets on her legs and arms, and in most cases a gold decoration in her nose, which designates her caste.

About all of the better known minerals are mined in India. She has a large iron, steel and coal industry, in addition to which gold, silver, nickel and many other metals are mined.

Huge Coal Reserves

Without the background of the size of the country and the population, it would be difficult to realize that there could exist so large a coal industry with a production of about 26,000,000 tons a year. The area of the country is divided into the territory in the British provinces, consisting of about 1,100,000 square miles, and the territory in the provinces belonging to Indian states, consisting of about

700,000 square miles. British India is divided into 14 provinces; seven of these provinces contain coal reserves, as do also two of the native provinces. The total coal bearing area is approximately 3,500,000 square miles, which makes India a country with the fourth or fifth largest coal bearing area in the world.

As some one has said, "Coal is truly a divine gift to man." It is the universal fuel, and we find men dependent on it everywhere. India is a hot country, a great part of which does not require fuel for home heating. Nevertheless, coal is the basis for and necessary to much of her industry. With this large area of coal reserves, India would seem to be well fixed for a long time to come, but that is not the case.

High Grade Deposits Limited

In spite of the large area, she is very much concerned with the question of conservation, for it seems that much of this coal is low grade and that the high grade coal reserves are limited. The Geological Survey of India in 1935 made an extensive survey of the coal reserves. Sir Lewis Fermor, director, issued a bulletin which sets forth the results of the study made by his department in an effort to secure estimates of the country's coal resources. He stated that the bulletin concerns itself with the reserves of good quality coals and with coking coals. These two represent about four-fifths of all the coal being marketed. It was the conclusion of the survey that special attention must be paid to the danger of exhaustion of these coals and its effect on the country's industrial future. Based on the consumption and on the working conditions at that time, the report warned that the "last ton of good quality coal will be mined in India 100 years hence, perhaps sooner." It hardly seems necessary to worry about the exhaustion which will take place in 100 years, but do not lose sight of the fact that the curtailment begins long before the exhaustion, and in such a large country, with such a large population, the consumption will greatly increase, so that long before 100 years have passed they may be into difficulties.

Large Iron Reserves Require Coking Coal

I was much more impressed with this situation when I learned that India has enormous reserves of iron ore of the very highest quality. According to the government reports, the iron ore resources in two provinces alone, Behar and Orissa, are estimated to be 3,000 million tons. In addition to the reserves in these two provinces, there are vast quantities of iron ore in other parts of India. This, therefore, explains the need of coking coal and the record shows that only about one-third of the reserves of good quality coal is coking coal, so that the question of conservation becomes an important industrial problem.

As stated above, India produces about 26,000,000 tons of coal a year, substantially all being consumed in India. The largest exports in recent years amounted to 350,000 tons, a large portion of which goes to Ceylon for the railways of that country. As an offset to the exports, there is imported into India each year about 100,000 tons of coal.

MR. and MRS. COSGROVE
En route around the world

Drifts for Small Mines—Shafts for Large

The mining of coal is very much the same as in this country. It is obtained by means of drifts and shafts; and, as has been our history, many drifts are opened up of small capacity, often for strictly local use, whereas the shafts, entailing a much larger investment, are developed for larger production. In the same way, the drift mines are more often in the lower grade coals, but the shafts, catering to the public over a wide area, have to be sunk in the higher grade deposits.

The people of India are predominantly agriculturalists, and since all of their work is done by hand with the crudest implements, farms are small and, as usual in the Orient, the whole family works as soon as they are big enough. Most of the coal miners are farmers who, because of the nearness to the mines, or the ever threatening famine, have become experienced in coal mining. In mining, up until three years ago, the system followed was the same as that used in the fields —the man took his entire family into the mine with him and they all joined him in his work.

Coal Miner Really a Farmer

However, the records show that the coal miner of India is in reality a farmer and that mining is just a side issue. When there has been a favorable monsoon and the crops are good, he turns his attention to farming; production of coal therefore drops and the mines have great difficulty in maintaining a sufficient labor supply. However, when the crops are poor and the agricultural conditions bad, they flock to the mines for work with which to eke out their meager existence.

Within the last three years the government has passed regulations restricting the use of female and child labor, so that the labor situation has been still further complicated for the mining companies. It would seem that in a country with such a vast population, the coal companies could resort to the same plans that have been used by the coal companies in this country—that is, build housing for the miners and move them in from other districts. This is purely the observation of a tourist; perhaps the caste system would make it impossible.

Small Railroad Cars Hinder Transportation

It's surprising how we meet the same problems we have at home in places so far away. I have just spoken about the labor problem, and I find that they also have a transportation problem. This arises from the fact that the movement of merchandise on the railways has been largely by small covered cars of eight or ten tons capacity. Distances in India are great and the railways frequently find it impossible to handle the quantities of coal offered over these long distances with this small equipment. To remedy this, some steel hopper cars of 40 tons capacity have been purchased by the railroads, but the reports indicate that a great many more will have to be added to satisfactorily handle the coal production.

There are many other familiar notes about the Indian coal industry to

one acquainted with the industry in America. They have what has seemed to us to be the old ever-present "investigation." The government has been investigating the industry, and there is a familiar ring to the government's statement that the real trouble in the coal fields is the inefficiency of the industry. Colliery owners complain about the competition of the collieries developed by the railroads, about the amount of captive tonnage, car shortages, inefficiency of labor, etc. The railroads have developed a substantial coal tonnage in their own collieries, so that while the railroads use almost 20 percent of the coal produced in India, they purchase only one-half of their requirements in the open market, the other half being captive tonnage.

Safety

A few years ago there occurred in India one of the worst coal mine disasters of the world. This took place in the Poidah colliery and resulted in the loss of 209 lives. As always happens after a disaster, the legislators became quite active on the side of safety, so that in 1936 strenuous efforts were started leading towards safety in the mines. Apparently these efforts are meeting with success.

They are developing in India something that has often been talked about in this country but never put into effect—namely, an organization for the grading of coal. The Indian government has organized the Indian Coal Grading Board, which board has started the grading, under certain circumstances, of solid fuels and the spreading of propaganda with a view of popularizing the use of soft coke. An additional object of the board is to try and develop the export market for Indian coals. The government is assisting in the export movement by giving a subsidy on all coal which is exported from the country, the Indian Coal Grading Board certifying to its quality.

Progress in Modernizing

In this backward country I was surprised to note that the government reports show a continued increase in the number of mines using electricity and the number of mines using coal cutting machines. Various American mining machine manufacturing companies are represented in India and supply a portion of this demand. In all probability, the new labor regulations excluding women and children from the mines and the new safety regulations have stimulated this progress.

The trains on which we traveled were good, considering the needs and requirements of a country where the great mass of the people have no comforts and no knowledge of the modern comforts to which we are accustomed in our everyday life. All the trains I saw were drawn by coal burning steam locomotives. I also saw some small plants in various places burning coal; wherever possible I made a visual inspection of the coal being used which was generally of good quality.

The Indian mining industry, and the same is perhaps true of most industries the world over, has had its ups and downs, but I was informed that in 1938 it was operating on a better basis than it had for several years.

Anthracite Conference Program Announced

The second annual anthracite conference of Lehigh University will be held Friday and Saturday, April 28-29, according to a recent announcement by Professor Howard Eckfeldt, head of the mining engineering department at Lehigh and chairman of the conference committee.

The program, which will center about the technology and utilization of anthracite, is designed to collate the results of researches in the combustion and economy of anthracite together with experience in production, preparation, distribution and utilization.

Included on the two-day program will be papers by 17 authorities. The general topics for consideration include merchandising methods, anthracite in the home and in industry, combustion characteristics of anthracite, and the economics of anthracite.

Sessions will be held on the morning and afternoon of the first day and on the morning of the second day. A dinner meeting will be held on Friday evening with Frank W. Earnest, Jr., president of Anthracite Industries, Inc., as toastmaster.

Wage Negotiating Committee Appointed

The appointment of a negotiating committee of 16 to meet with union officials on March 14 with respect to a new wage contract for the Appalachian area was completed early in February. These delegates were named by various associations included in the area to be covered by the new contract.

Members of the committee (alternates shown in parentheses) and the district they represent are as follows:

Southern High Volatile: L. E. Woods (J. D. Francis)—Williamson and Logan districts; W. J. Cunningham (Geo. H. Esser)—Harlan-Virginia district; Holmes Morton (Harry LaViers)—Kanawha and Big Sandy district; L. C. Gunter (Frank M. Medaris)—Southern Appalachian and Hazard district.

Southern Low Volatile: P. C. Thomas (Edward Graff)—New River district; O. L. Alexander and J. W. Carter—Pocahontas and Tug River district; L. T. Putman (P. C. Graney)—Winding Gulf district.

Central Pennsylvania: Charles O'Neill and A. J. Musser.

Western Pennsylvania: J. D. A. Morrow (R. E. Jamison) and W. L. Affelder (James Patterson).

Ohio: Walter Robison and R. L. Ireland, Jr.

Northern West Virginia: Charles Dorrance (Samuel Pursglove) and Alexander Grant (William Findlay).

The committee was scheduled to meet to formulate plans for the forthcoming wage conference, and report to representatives of the operators on or before February 21.

Where alternates have not been selected, it is reported that principals may call on any member of the scale committee to serve in their stead unless the alternate has been specifically designated by the operators in the district.

Progress on Homestake's Yates Shaft

Work on the huge new Yates shaft of the Homestake Mining Company, Lead, S. Dak., located on a ridge about a half mile east of the Ellison shaft, is progressing according to schedule, it was recently announced by Guy N. Bjorge, general manager. Underground connections have reached the shaft on the 800, 1,100, 1,700 and 2,300-foot levels.

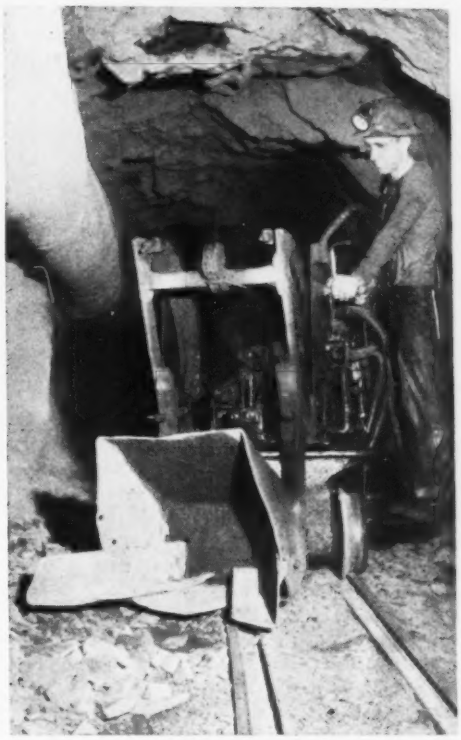
A total of 1,550 feet of pilot raise has been completed, and stripping to size has begun at the collar of the shaft. The pilot raise is 6 x 8 feet, and the shaft, when stripped to size, will be 15 x 27 feet and approximately a mile deep.

The Yates shaft is to have six compartments—two for cages, two for skips, one for a "runabout" skip for transporting small, light loads between various levels of the mine, one pipe and cable compartment, and a small manway which will permit climbing through by ladder.

Three pilot raises are under way at the present time, according to Bjorge, and when the raise has been cleared, stripping to size will probably be started at three different places, with rock and earth blasted down from the sides and pulled out from chutes at the bottoms of specified levels.

Work on the new shaft was begun last April at which time it was estimated that 2½ years would be required for completion. The Yates will eventually replace the Ellison shaft which will be wrecked by ground movement when pillars now supporting it are mined.

MUCKING MACHINES at the MAGMA MINE



Side wings attached to bucket of mucking machine permit efficient side clean-up

● ***Rock Temperatures Going as High as 140° F. Make Them Indispensable for Development Work***

By DARRELL GARDNER
Mine Superintendent
Magma Copper Company

THE ore in the Magma copper mine at Superior, Ariz., occurs in a narrow fissure vein. There are three ore shoots—the main one, the east, and the west. The east and west ore bodies are over 5,000 ft. apart horizontally, so that even with a 200-ft. level interval, drifting is one of our major operations. It is necessary to have five drift headings working continuously to keep our development up to date.

High Temperatures Complicate Mucking Problem

The Magma mucking problem is complicated by high rock temperatures which increase 3° for every 200 ft. of depth. Even on the upper levels where the rock temperature was no higher than 110° F. four muckers were required to clean out a 5-ft. round in an 8 x 8-ft. drift in one shift. As we went deeper with a subsequent rise in temperature it became increasingly difficult to handle the hand mucking. In one of the long connections on the 2,550-ft. level it proved practically impossible to put enough hand muckers in the face to clean out a round a shift. As speed was as great a factor as costs in most of the drifts we were faced with a double problem.

To offset these disadvantages the company bought its first mucking machine—a Butler Shovel-loader, in May 1927. In the beginning it was used in the sills on the 2,250-ft. level where temperatures were high and hand mucking unsatisfactory. Here the vein averaged 30 ft. in width. We took stopes 15 ft. along the strike and from footwall to hanging wall. Since the machine will clean up a 6-ft. radius circle it was a simple matter, by using a jump switch on the drift track and shifting the track once in the sill, to clean up from wall to wall (Fig. 1). This was an ideal setup where the ground would stand without timber, but where support was necessary special long caps had to be used on one side with a consequent slowing up of work. However, when the vein narrowed this system had to be discontinued.

A crew of hand muckers could get approximately 30 tons a shift per working place from these sills whereas a Butler, with one man less, mucked 100 tons. As we developed more experienced operators and found that mucking machines were satisfactory in drifts we bought three more and were thus enabled to maintain our 5 ft. per shift average in the drifts.

Side Wings Extend Uses of Small Machine

Our experience indicated that the Butler will not work safely in a head-

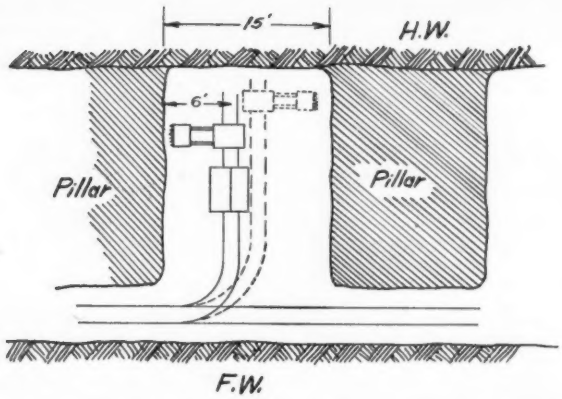


Fig. 1. Showing earlier method of loading mechanically where vein was thick

ing smaller than 8 x 8 ft. The company, therefore, bought an Eimco-Finlay for use in the smaller drifts where heat made hand mucking impractical. This machine is easy to operate and move, and is preferred by the drift men to the more complicated and cumbersome machines. By equipping the bucket with side wings (Fig. 2) we found that the Eimco-Finlay could be used satisfactorily in our larger drifts and clean up as effectively as the bigger machine. As a result we now use Eimco-Finlays in all our drifts and have five in continuous service.

Our method of operation is simple. We work two shifts a day in all our drifts. A cross bar is set up over the muck pile. The mucking crew cleans up to the machine man who finishes his top round while they eat their lunch; the machine man and chuck tender have their lunches while the crew cleans out the muck from under the bar to the face. While the bottom round is being drilled the muckers bring forward the track and the ditch. The 30-ft. rails are laid on their sides and used as slide rails until there is sufficient room to put them in place.

Direct and Indirect Costs Reduced

A drift crew consists of five men—a machine man, a chuck tender, mucking machine operator and helper, and motor-man. The machine man takes the lead and is held responsible for the heading. All drifts are run under contract and the crews are paid all they can make. The drift contract price per foot remains the same as when hand mucking was in use, despite the fact that there is one man less on a mucking machine crew. A mucker's wages—an average of $4.30 day's pay and $2.50 bonus—are taken out for the machine, which therefore saves the company each shift $4.30 plus $2.50 minus a maintenance charge of $1.18. This amounts to

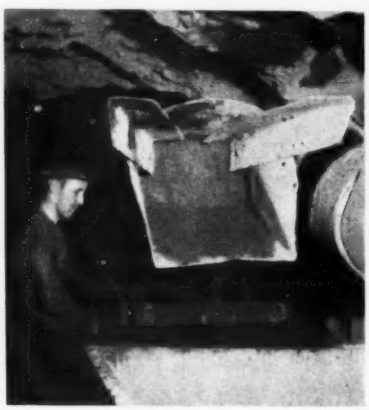


Fig. 2. Smaller machines were found more efficient in narrow headings, and side wings permit their satisfactory use in larger drifts

$5.62 or $11.24 per day on a two-shift basis.

It is obvious from these figures that a machine will pay for itself in less than a year. On a footage basis of 10 ft. a day $1.124 per ft. is saved. This, however, does not represent all the savings. Because of the fact that greater monthly advances in the drifts are made, indirect and overhead costs per foot are much lower.

Again saving is effected in stub crosscuts up to 50 feet in length. Here by using a turn sheet to put the machine into the crosscut, the cost of taking out ground for a curve and of putting in a switch is saved. The car to be loaded is spotted on the main line directly in front of the crosscut and the mucking machine fills it from the side (Fig. 3). The time lost by the mucking machine in running back and forth between the muck pile and the face is more than offset by the time saved in switching the cars. As can be seen from the sketch, the whole string can be loaded without switching.

This same system is used in silling out where the vein is wide enough to warrant it. Here by using small rails laid on the floor it is a simple matter to shift the machine from one line of sill sets to another (Fig. 4). It has been found cheaper in some places to drop the ground from the first floor above the sills than to put in temporary chutes.

Working Conditions Greatly Improved

Aside from actual costs there is a saving in physical effort for the men themselves—a matter of importance in hot working places where much hard work is virtually impossible. An ingenious operator can use his machine to switch cars, push the slide rails forward, raise caps in timbering ground, or drive side spiling. Some of them even use the machine to lower the bar from the upper to the lower setup.

We tried the dragline scrapers in drifts but without much success because the operator was too far from the fresh air supply. Specially treated canvas tubing is used to convey the air into the heading and discharge it near the face. Since the hoist has to be set up approximately 60 feet from the face and only about 40 feet of drift can be kept down to a working temperature, the operator is left outside the cooled area. On the 3,000-ft. level where the vein is narrow and the ground stood without timber we had low silling costs with the scraper. That, however, was after the drift

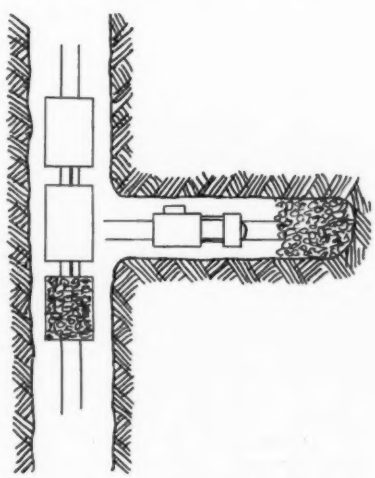


Fig. 3. Savings are effected by driving stub crosscuts as shown above. Turn sheet used to put machine into crosscut

was connected and the ventilation established.

Scrapers Used for Back-Filling Stopes

We use the scraper for back-filling stopes where they connect to the sill floor of the level above. The final fill is dumped from the drift on the footwall side of the vein. The hoist is set up in the center line of sets of the top floor of the stope and a slide is built under it running to the hanging wall (Fig. 5). The hoist is set on the footwall side so that the snatch block can be brought back as the hanging wall sets are filled and hand mucked tight against the old floor. One man here accomplishes more with the dragline than three or four can by hand.

Mechanical loader discharging into car. Bucket capacity, 20 cubic feet

In a mine like the Magma, where rock temperatures increase with depth until 140° is reached on the 4,000, the lowest working level, the mucking machine is indispensable. The heat liberated from such rock would make costs prohibitive under the old method of hand mucking. The use of the machine insures good average monthly footage even in the hottest working places.

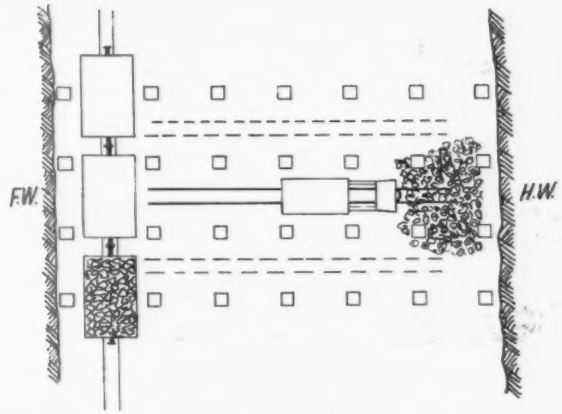


Fig. 4. Same method shown in Fig. 3 is used in silling out where vein width warrants

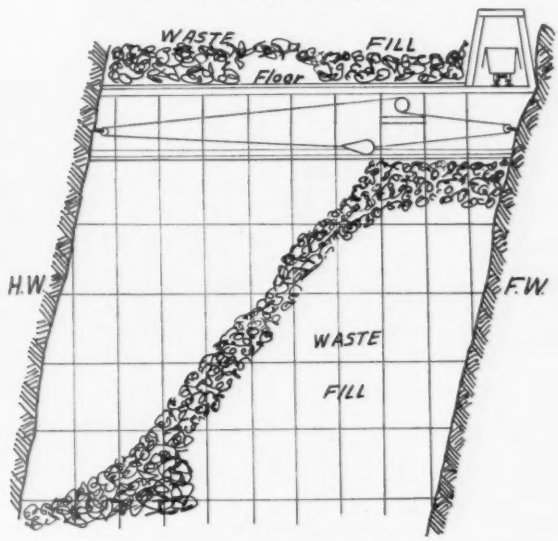


Fig. 5. Scrapers are used for back-filling stopes that connect with sill floor of level above

Anthracite Operators Confer With Pennsylvania Governor

In an effort to reach a solution to the problems of the depressed condition in the anthracite region of Pennsylvania, a group of anthracite operators conferred with Governor Arthur H. James on February 17. It was reported that no suggestion had been agreed upon, but the governor was hopeful that a solution could be reached. Another session with the operators is in prospect, and the governor was scheduled to meet with the miners to hear their side of the matter on February 24.

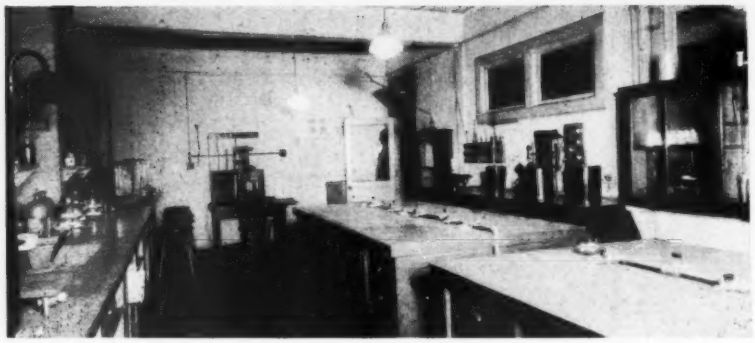
According to reports, the operators were not unanimous in their decision for bettering conditions. Among the suggestions offered by them were prorating production and price fixing. Some recommended both, and others cited high labor and freight rates as the most serious problem confronting them.

State Safety Record Lauded

Praise for both miners and operators for West Virginia's best coal mining safety record which was established in 1938, was expressed by speakers at the Eighth Annual Dinner of the Central West Virginia Coal Mining Institute at Clarksburg, February 18.

Six hundred members and guests heard addresses and informal talks by N. P. Rhinehart, state mines chief; A. G. Mathews, state compensation commissioner; M. J. Ankeny of the United States Bureau of Mines in Pittsburgh; Frank Miley, UMWA district president and others.

Charles E. Lawall, acting president of West Virginia University, was toastmaster, and E. J. Weimer, division superintendent, Koppers Coal Company of Grant Town and president of the Institute, presided.



Coal laboratory at School of Mines, West Virginia University. Such needed facilities will be greatly expanded if new building under consideration is erected

"You Don't TALK LOUD ENOUGH"*

● ***Urgent Plea for Wider Dissemination of Ideas and Information to Benefit Coal Mining. Research Must Be Extended, and the Consumer Better Educated***

By W. E. E. KOEPLER
Secretary
Pocahontas Operators Association

THE country is in its present condition largely because a certain stripe of talker talks too much and too loud; but I want to talk to each of you here tonight about *your* ability to talk and the reasons for *your* expressing yourselves. Institutes like this are ideal places for the dissemination of sound ideas which can be passed along by each of you if you will just talk. You would not be here listening all day long to intelligent papers and discussions if you were not above the average in intelligence, but how often do you remember to pass along the benefit of the ideas you get here? They should be passed "way down the line" to the least of those with whom you come in contact.

Many of you are employers of labor and many are supervisors over men. Employers are the natural labor leaders. Who creates the job for the men? The employer, of course. Doesn't that qualify him to guide their destiny all the way? If you would talk out, perhaps that would be true.

There are coal fields with which I am familiar that have operated under union agreements in this last era without an arbitration board or an umpire. The management is on speaking terms with the men, and grievances are being settled according to the contract at the mines at which they originate. The employers can be favorable to organized labor under such circumstances and some labor leaders are happy over such relationships, too.

The Past

To get a bench mark, let us go back to conditions existing when I visited your institute first. Business conditions were terrible. Coal prices were low. Wages were all cut up and nothing was right about anything. It did look like it would soon be our finish. I doubt if conditions are as bad today as they were then, and yet we lived through it all and had some good times on the way. It is a long, long trail on the path of progress from the mining and coal utilization conditions of those days down to present methods and customs.

The Present

We are now harassed by 50,000,000 barrels of oil a year from foreign countries, equivalent to a million tons of coal a month with no protective tariffs worth while against it. Natural gas used last year was equivalent to 61,000,000 tons of bituminous coal. Hydroelectric power under government subsidy absorbed about 31,000,000 tons of our business in 1937. Fuel and gas oil used in this country last year was equal to 200,000,000 tons of coal. Federally encouraged municipal power plants are going to Diesel engines almost exclusively and leaving coal. Progress is bringing coal economies that account for very large losses in our tonnage figures. Care

* Presented to Annual Meeting of the Coal Mining Institute of America, Pittsburgh, Pa., Dec. 8, 1938.

will have to be taken with government price fixing that it doesn't drive more of our business to the substitutes.

The present outlook is not bright but it points out that we have a lot of progress we must make and we are going to make it. We certainly must talk about it first, and now. Right now we are doing some acting, too, by buying only products into the production of which coal has entered.

Mining No Longer Drudgery

One thing seems certain on the mining end of the business: That it will not be the back-breaking drudgery it was, thanks to machinery. Hand mining, cutting the old kerf with a pick, isn't done any more. There are many loading machines, too, and the machine is making labor for more men than formerly, after the readjustment, despite isolated cases cited by the opposition to this progress. Such tipples as we have now dwarf the old ones into a mere speck. Mines electrified and lighted throughout were unheard of a generation ago. Whole coal fields are spoken of today as 93 percent electrified, whereas we once discussed an electrified mine. There is such a lot that could be gone over to prove that the production end of the coal industry is right out in front in the path of progress.

Educated Men Needed

Educated mining men are going to be needed in the new mechanical age all the way down the line. At the top there must be more engineers. In the Pocahontas coal field there are 70 general managers and superintendents. Of these, 32 are practical mining men who have worked up from the ranks; seven started in the office; and 31 are engineers of one brand or another. Only a few are mining engineers with M.E. degrees. But the educational needs go all the way down the ranks. All education does not come from colleges.

Institutes like this did much of the educational job that made the path of progress lead up the hill. Mining institutes keep your jobs from becoming dull and make them interesting, too. You learn to talk louder here.

The Coal Conference

One of the modern movements in which I am most interested is a similar educational undertaking. We have named our meetings Coal Conferences. It is not a new idea, as it began some years ago at the Universities of Illinois and Purdue. The development of the idea is new. At first we organized these conferences under the auspices of the state universities and the associations of retail coal merchants and heating-appliance men in the several states as a market-promotion project. We discovered several incidental benefits.

The faculties lectured to us out of textbooks dated in the nineties, and were shocked to find that they were teaching their students antiquated knowledge about coal and combustion. It did the salesmen and coal merchants a world of good to get the review of the fundamentals from the professors, however, and the second year both parties were much further advanced and the improvements in the lectures and papers were wonderful. Gradually progress will be made in these programs until we will be able to have much new and original material presented at these conferences.

These Coal Conferences have been held at the Universities of Wisconsin, Michigan, North Carolina, Illinois, Purdue, and West Virginia. They are planned for the next year also at Ohio State, Virginia, and Maryland. There have also been developed in the cities, especially by the retail coal merchants, short courses in combustion at institutions like Detroit University, Toledo University, Case School of Applied Science, Cincinnati University, Franklin Institute of Richmond, and many other such places.

Some of us have been selling with some success the idea of the retail coal merchants' associations holding clinical meetings at which they discuss one subject at each meeting with an expert as the guest speaker. They take up stokers at one meeting, then automatic control, dust-treating, chutes, storage, and even devote whole meetings to such subjects as rubber tires and their uses on trucks.

The whole program revolves around the associations. The success of these ideas depends on the support you all give the various associations.

The Headquarters

We have developed during the past two years a headquarters coal conference at the University of West Virginia which is accessible to the coal fields of Pennsylvania and Ohio as well as the southern fields. At this conference we have representatives from the other coal-producing states, from many universities, and a large attendance of dealers and distributors of coal and equipment. This conference is intended to be a source for much new educational material about coal. We are much encouraged by the progress already made, and look for a big future for this movement.

Consumer Extension Courses

The coal industry was surprised to learn recently at Morgantown of one

Learning fundamentals of coal mining in model room of School of Mines, West Virginia University. Small fan operates mine ventilation model in front center

educational job done in the state of Wisconsin by the university during the past 25 years. An extension course has been given over the state to groups of all kinds, many of them organized for the purpose of receiving instruction in the better and more economical use of coal, which up there is rather precious.

During this long period the coal industry has not talked loud enough to be at all helpful to these consumers remote from the coal fields. We have been able to improve these extension courses by the coal conferences, and members of the faculties have made visits to the coal fields to improve their knowledge of fuels and how to use them. They will talk much more intelligently now.

Publicity

Sometimes we speak of this talking out loud about our business as publicity. As I was brought up in the Fourth Estate, I cannot refrain from feeling that it must be legitimate publicity or it is not worth having if we get it. We have found the newspapers and other publications much interested in the talks at these conferences, especially where we really hit on something new. An illustration of a good foundation for publicity is the Pocahontas Exhibition Mine which is operated by the Pocahontas Operators Association through which you drive your automobile and see everything that ordinarily goes on in a coal mine. There is a 12½-ft. seam in the original Pocahontas mine which lends itself to this project perfectly. We opened it for the National Editorial Association last June, and it made the papers from coast to coast because it had the foundation for news.

Chemical Research

Recently the magazines have been full of fascinating stories about the silk stocking that will come from coal. There is soap in coal. Synthetic rubber has been invented. Alcohol, ammonia, insecticides, fertilizers, dyes, drugs, perfumes, and chemical products too numerous to mention. These have all been picked up by the newspapers, and the people generally are being fascinated with coal more than ever before. One of the surprising things in my contact with the educators and the public is the way they look at us in wonderment that we do not appreciate the marvelous product we produce and just burn up.

Incidentally, has it occurred to you that many of the gas pipe lines focus right down at the coal fields? Upon the exhaustion of the gas resources it will be possible to convert coal into gases and liquids and pipe them right on into the markets that gas has borrowed from us to our great embarrassment just now. Oil pipe lines, too, are often similarly situated. We may not be as bad off as we think if we can just hold out.

New Uses Now

Our immediate difficulty is that we have to "eat" our coal right now. Therefore, we are interested in the immediate prospects for new business. At our Coal Conferences these are taken up, and some good leads on new business develop. Down at the North Carolina State College conference an engineer pointed the way to the new type of tobacco barn and the controlled heat for curing tobacco with the stoker and air-conditioner. The old log barn must go, of course, and in its place will come the concrete block or permanent barn that will do a much better job of curing in less time and with greater profit. In the course of a conference program many simple examples like that are discussed.

Then somebody wants to keep alive the truth that coal is better for cooking. Last year 900,000 coal-burning cook stoves were sold in this country. However, we have the new suggestion that we should seek the metal that will carry the heat to an element in the kitchen from the furnace fire pot. That would fit in beautifully with the best way I know to keep coal in the home heating plant. If we will sell the homeowner the indirect water heater for his service hot water, we will give him the most economical hot water the year round and stay in business ourselves. The opportunity for this business runs into big tonnage.

Now comes another dreamer who says that it is going to be practical to park the heating element of the gas refrigerator in the firepot of the coal furnace, stoker fired, too, and have year-around refrigeration, cooling, and air-conditioning with coal. We will not need to wait for the exhaustion of the oil and gas resources of this country if we can complete such a combination coal service plant and talk about it. A complete household setup is our greatest need. Maybe talking about it will make enough people get busy with these dreams and make them come true.

We have received a very insistent letter from a gentleman in New England who says we are crazy not to market at least part of our product for fertilizer. He says: "Sell slack soft coal as a fertilizer and a plant vermin killer. Farmers, florists, gardeners, fruit growers, or any other types of agriculturists, aren't going to pay $25 and up for a ton of animal or chemical fertilizer when they find a ton of slack coal will not only fertilize but to a considerable extent kill off plant vermin hibernating in the soil."

We can doubt that coal is a fertilizer and still observe plants, vegetation, and even trees growing on the culmn banks and the burnt-out coke-oven banks. The Agricultural College at West Virginia University is making the experiments suggested with slack coal, and here in Pittsburgh you have a laboratory going us one better by proving that ashes make a soil-loosener and feeder that give very important results in agronomy.

Perpetual Education Needed

Education is a continuous process and it never ends. You never learn your trade—somebody is always upsetting the knowledge of the past with the developments of progress. The life of a coal preparation plant in my experience has been about 12 years on the average. Your educational equipment for your job is likely much shorter than that.

It is apparently difficult for the coal industry to grasp the educational requirements of the present age, but I have tried herewith to chart a simple path. First, you must all get back to studying, if only on the bump of a log; next, let us get together in these institutes, in other informal educational organizations, and finally in the formal organizations like the schools. We are faced with the necessity of educating and researching our way out into our place in the sun again. Our new statutory leisure will furnish the time to all of us except the big executives.

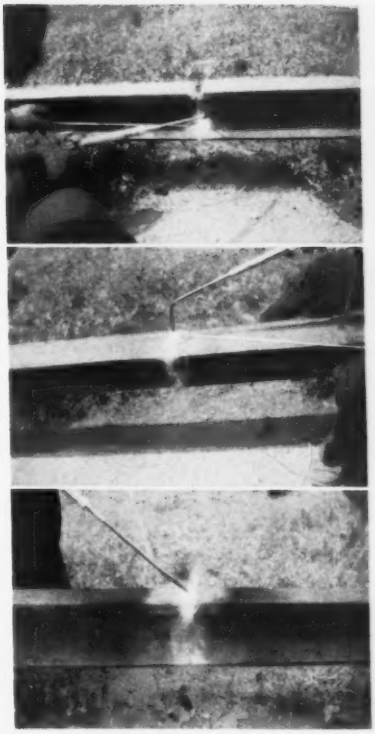
The main objectives are twins: Education and research for our industry and for the public which can be served better and more economically by coal than by any substitute natural resource.

Mine Inspectors to Meet

The Mine Inspectors Institute of America will hold its thirtieth annual convention at the William Penn Hotel, Pittsburgh, Pa., Monday to Wednesday, June 5 to 7, it was recently announced by C. A. McDowell, secretary.

BUTT-WELDING RAIL JOINTS in Mine Haulage Ways

By T. M. HAMER
Long Beach, N. Y.



Three stages in welding operation. Top—starting the weld; center—welding the base (second step); bottom—welding the ball (third step)

THE butt-welded rail joint has been widely and successfully applied for many years to standard steam railroad tracks in tunnels, and at highway crossings, to reduce costs of maintaining such joints. Because of the necessity of allowing for expansion and contraction due to temperature changes, it has not been the practice to butt-weld rail joints on long stretches of track above ground, but with the advent of heavier rail sections, some railroads are now conducting tests to determine the possibility of welding the joints for longer stretches of open track.

As temperature changes which occur inside mines are comparatively slight, it has been found practicable to weld rail joints on long stretches of haulage-ways underground, and this has proved especially advantageous where the rail forms part of the electrical circuit which provides power for mine operation. The number of coal mines now using welded rail joints is constantly increasing.

The welded rail joint is strong and permanent, costs little to maintain, and provides a smooth riding track. Also, it offers less electrical resistance in the track circuit, to the extent that the joint has 100 percent conductivity as compared with the rest of the rail. This reduces power costs and improves the operation of any electric motors which are electrically connected to the track circuit.

Several methods are available for welding rail joints in such a way as to provide strength of weld many times greater than actually required to carry the maximum wheel load which occurs in normal mine railway practice.

The most economical of these methods is that of bronze-welding the joints by the oxyacetylene process, using a high-grade bronze which has comparatively high tensile strength as well as resistance to wear. Rail joints at coal mines are bronze-welded in this way at a cost of $1 per joint or less, under average conditions, and frequently at a lower cost than that of providing and installing angle bars, bolts, nuts, and copper bonds.

Satisfactory butt-welded rail joints are secured also by using steel welding rods instead of bronze, and by applying these by oxyacetylene or by electric arc welding, at a cost averaging slightly more than twice the cost of oxyacetylene bronze-welding. Steel butt welds usually cost around $2.50 on 60-lb. rail under average conditions, either by oxyacetylene or arc welding.

The above-described methods apply to butt-welded joints in which the rail ends have been properly vee'd in preparation prior to the weld, by means of the oxyacetylene cutting torch, and then welded throughout the entire sections of the end of the rail. It is not good practice to weld plates or angle bars to bases or webs of rail, because of failures which may result from stresses arising from welds of this faulty design. The butt-weld, in which the entire rail end is welded to the end of the base, web, and ball of the adjacent rail, conforms to standard practice as successfully applied by oxyacetylene welding on steam railroads.

One advantage that oxyacetylene has over arc welding on steel rails is that in gas welding the heat application is more gradual, less intense, and more evenly diffused through the rail section, whereas the sudden application of intense heat by arc welding on a highly localized area on high carbon steel does not result in as ductile a weld, unless the rail joint is preheated before welding, and reheated after welding to relieve stresses.

Suggested Procedure

Before starting to weld, provision should be made for adequate ventilation, and the dispatcher and trip crews should be notified as to locations where welding is being performed. Joints and ties should be surfaced, so as to provide a firm support for the rail.

A helper should be provided to assist the welder in handling gas cylinders, and in watching out for train or locomotive movements.

Precaution should be taken to prevent oxygen and acetylene cylinders from coming in contact with trolley wires; one way to do this is to place them inside wooden boxes or covers, or jackets of rubber insulation.

Welding and cutting equipment

should be tested, to ensure that it is in proper condition, and free from leaks, before taking it into the mines.

Preparing Rail Ends for Welding

Where it is possible to weld rails out of traffic, the base of the rail should be beveled on the bottom of the base up to the web, so as to form a 60-degree vee when the two rail ends are placed together, as in Fig. 1. Where rail is welded in position in the track, the base is beveled from the top, as in Fig. 2. The webs are then beveled to form a 60-degree vee, with apex pointing towards the wall of the mine (see Fig. 3), so that welding can be performed by an operator working from the inside of the track.

There are two methods of preparing the ball of the rail, and each has advocates. The first method is based on the commonly accepted practice of using two small vees instead of one large vee when welding sections of thicknesses such as the ball. In this way less welding rod is required to fill two small vees than one large one, so that the double-vee weld is quicker and costs less. This type of joint preparation is illustrated in Fig. 4, with a vee on each side of the ball of the rail, and pointing towards the middle of the ball. Note that these vees are approximately 60 degrees, that they are slightly U-shaped, and that the vee on the inner side is slightly larger than the outside vee. This is to make the inside vee continuous with the vee on the web of the rail.

The alternative method, shown in Fig. 5, is a single 60-degree vertical vee in the ball of the rail. This makes a type of joint which is easier to prepare and to weld, especially for beginners, since the welding is done in a flat position and there is less tendency for molten metal to drip out of the weld. It may be noted, however, that a steel plate or a carbon ledge or shelf can be placed under the ball of the rail, against the web, and supported by a steel wedge or block. This provides a support for the weld, and thus assists the operator in preventing loss of molten metal. Note that when bronze welding is used with the double-vee weld, there is more steel in the path of the wheel tread, and that the strength and wear resistance of this bearing surface is greater than when bronze welding with the single-vee joint.

Welding the Joints

Rail joints can be welded in position inside the mine; or, if conditions permit, several rail lengths can be welded together outside the mine and then dragged into position before placing in the track. Steam railroads sometimes use the latter method to avoid necessity of welding operations inside tunnels.

The base is welded first, whether the rail is welded in or out of place in the track. Where welded out of traffic, angle bars should be used to hold the rail ends in alinement, and the welds made beginning at the center and working to the outside. The rail can then be turned over and the angle bars removed before starting to weld on the web of the rail.

When the welding is to be done on rail "in position," no angle bars need be used, unless it be necessary to allow for trains to pass from time to time, in which case rail ends are held in place by using an angle bar on one side of the rail, while welding the base on the other side. The angle bar is then removed, to permit welding of the base on that side. The base is welded beginning at the center, and working towards the outside on both sides. As welding proceeds, a hole should be visible ahead of the puddle, to insure that penetration is thorough.

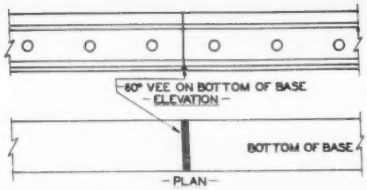


Fig. 1. Preparation of base for welding out of traffic

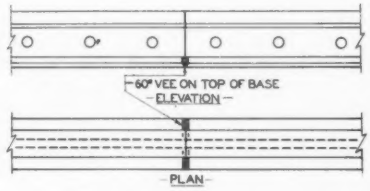


Fig. 2. Preparation of base for welding in traffic

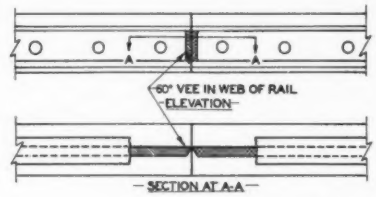


Fig. 3. Preparation of web with V pointing to wall of mine so that welding can be done from inside of track

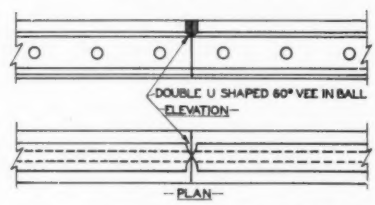


Fig. 4. Preparation of ball with 60° double U-shaped V

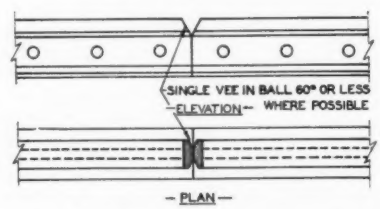


Fig. 5. Preparation of rail with 60° single V

Welding is then started on the web of the rail, starting at the base and working upwards to the ball. In the double-vee design, welding continues directly from the web up to the top of the ball, and the larger vee in the ball is then welded. With the single-vee ball, welding starts at one end of the vee, and proceeds to the other end; two or more layers of weld may be required to complete the weld.

With a good butt-weld at the joint, angle bars or fish plates are not necessary. However, when the work is done by an inexperienced welder, it is recommended that angle bars or fish plates be applied and bolts tightened after the weld has cooled, and that this practice be continued until the dependability of the work has been proved and the welder fully qualified.

One method used to level and line the rail at the ends

Compensation Act Discussed By Illinois Coal Operators

An all-day meeting of the Illinois Coal Operators Association was held on January 20 for the purpose of discussing the operations of the Workmen's Compensation Act as it affects the operation of the mines, sales, etc. Guest speakers from other states, including West Virginia and Indiana, were also on hand to join in the general discussion. Those interested in obtaining a printed record of proceedings should communicate with Mr. Fred Wilkey, secretary of the association.

The Acupan mine of the Balatoc Mining Co. typifies rugged topography in which most mines are situated. Extremely heavy rainfall under these conditions often plays havoc with expensive surface equipment

MINING PROBLEMS in the PHILIPPINES*

● ***Education of Native Labor, High Costs of Materials and Power, and Political Uncertainties Cited as Principal Difficulties***

By JUDGE JOHN W. HAUSSERMANN
President
Benguet Consolidated Mining Co.

IT IS a pleasure for me to appear before this body of outstanding mining executives whose operations, generally speaking, are so much larger than our more limited mining operations in the Philippines, and I welcome the opportunity to tell you something of our mining industry and the problems connected with it. I want you to understand from the start that I speak only from my experience as a mining executive. I am not a mining engineer, nor am I familiar with the ordinary operating problems that beset all mines, such as difficult ground, heavy water flows, geological problems, and so forth. I am assuming that you are interested more in the Philippine mining industry insofar as it differs from your own.

Early Prospecting Methods

One of the great differences, I should say, is that the mining industry of the Philippines was started by men who were not miners. The first prospecting was done by venturesome soldiers who, during their service in the Philippines at the time of the Spanish-American War, heard tales of gold mines back in the hills and decided to take their discharge from the army in the Philippines in order that they might be free to go back into those hills in an attempt to make a fortune for themselves. Their prospecting was done, not as it has been done here in the United States by actually searching for outcrops of gold-bearing veins, but by living with the natives and gaining their confidence to the point where these natives were willing to show the prospector their mines, both active and abandoned.

The accepted formula for prospecting was to first find a grubstaker and then take up residence in an Igorot community, preferably one where the natives were wearing gold ornaments, find out the location of the native mine workings and then cover the same by a location under the newly established mining law. It is a fact that with only one or two exceptions all of the gold deposits now known in the Philippine Islands were already known at the time of the American occupation and, in the country where the Spanish had control, were already covered by Spanish "denuncias." One of these districts was what is now known as the Baguio district. At that time it was called Antamok, the district in which our mines happen to be

* Presented to Metal Mining Convention of the American Mining Congress, Western Division, Los Angeles, Calif., Oct. 25, 1938.

located and with which I am consequently most familiar. There, the early American prospectors found the Igorots actively engaged in shallow mining operations. They had attained a degree of expertness in their mining which was remarkable, and had a nose for gold which resulted in their discovery of practically everything of any value.

In our subsequent mining operations we have connected with some of their old stopes and have found modified square sets there, probably several generations old, which would do credit to any of our American miners. The only difference between these square sets and the usual square set timbering is that they were much lighter and used the mortise and tenon principle.

Igorots Friendly to Americans

Strangely enough, the Igorots seem to have accepted this virtual usurpation of their mines by American prospectors, although they did not understand how such mines could be taken away from them by any law and the mere act of placing posts in the ground. The explanation probably is that the mines, having been worked for generations, were already practically exhausted. Furthermore, the Igorots, being enemies of the lowland Filipinos, regarded the Americanos who were fighting the Filipinos as their friends. This attitude exists even today. They take the position that they have never fought with the Americans and have never been conquered by them as were the Filipinos, but that they have always been friendly with the Americans and have allowed them to come into their country and stay there because of friendship.

No Extralateral Rights

The first claims in the Baguio district were staked in 1901 under a temporary mining law which permitted the staking of claims 1,000 feet square. It is interesting to note that there was a denial of extralateral rights in the Philippines from the start, probably because no such rights had ever existed under the Spanish rule. Later, when the civil government took over from the military government, the standard size mining claim was changed to 300 meters square. In other respects the mining law adopted by the Americans for the Philippines has been very similar to the Federal mining law, with the notable exception that an individual was not allowed to hold more than one claim on the same vein. The impracticability of the last named provision was discovered almost immediately, and it has never been enforced.

Development of Benguet

The claims located by the early prospectors during the period immediately following the Spanish-American War did not prosper a great deal. At that time, it was a week's journey from Manila to Baguio; there were no roads over which to transport machinery and there was very little capital available locally. The only serious effort made was that of the Benguet Consolidated Mining Company, organized in 1903. A 60-ton mill was erected in 1906. Transportation facilities were sadly lacking; this mill had to be lowered down the hillside into the bottom of the canyon by ropes. There were no roads to the mine in those days. In 1910 this mill was partly carried away by record typhoons. The typhoons of 1911 finished the job and carried away not only the mill but the mill site.

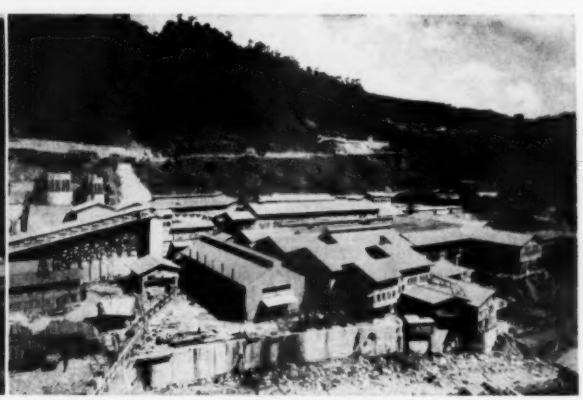
After this disaster, it was more difficult than ever to obtain money to continue the operations. However, fortunately for us, the mill had operated long enough to prove to the general public that there was gold to be obtained in the Benguet mine, which to them was still an isolated spot up in the Igorot country that might as well have been in Timbuctoo.

Mr. C. M. Eye, whom many of you know, pointed this out to us and proved to us that the venture could be made a success. I must admit that Mr. Eye's faith and confidence in the property at this time, together with his ability, displayed in opening further ore bodies and later designing and building a ten-stamp mill, was to a large degree responsible for carrying us through these early struggles. The mill built by Mr. Eye proved to be a turning point in the career of Benguet. By 1916 we were on our feet and paid our first dividend. Since then, Benguet's dividend record has been unbroken.

Balatoc Taken Over in 1927

Since 1927 a part of these dividends has come from profits derived from Benguet's participation in the Balatoc Mining Company. These claims were also located in the years immediately following the American occupation by oldtime prospectors, which claims covered known Igorot workings. The work was very desultory, however, and the mine had many setbacks in its early days. There was reorganization after reorganization as stockholders became disgusted and refused to put up any more money. The property was, during various stages of its development, submitted to groups of

1,000-ton Benguet mill. Uses all-sliming cyanide treatment with preliminary wash and flotation of resulting primary slimes. Recovery is 93 percent



1,200-ton Balatoc mill. All-sliming cyanide treatment used with preliminary wash and jigs ahead of bowl classifiers. Recovery is 92 percent

local capitalists and even to some of your very prominent mining companies in this country.

In 1927 the Balatoc Mining Company, who at that time was in possession of this area of mining claims, again found itself financially unable to carry through the development of the mine. They appealed to the Benguet Company and an arrangement was finally made under which Benguet would build a 100-ton mill and carry on development of the mine at an estimated expenditure of 600,000 pesos. We went at this job very energetically and by the end of the following year had completed construction of the mill. The mill started operation in January 1929, and by the end of 1929 Benguet had been repaid its expenditures over 600,000 pesos, amounting to about 900,000 pesos together with interest, and a small dividend was distributed. Since that time, Balatoc has never looked back. At present it maintains a regular production of 1,000,000 pesos ($500,000) a month, and its mill capacity of 1,200 tons per day is being further increased to 2,000 tons per day.

Bontoc Igorot miners. Small personal effects such as matches and money are carried in woven basket caps, the design of which indicates whether the miner is a bachelor or is married

Florannie chromite mine. Some 70,000 tons of 50% or better Cr_2O_3 ore has already been shipped from this operation

Chromite Properties Opened

A few years ago, partly because I felt that Benguet, having been successful and occupying first position among the mining companies in the Philippines, should take the lead in building up the mining industry of the Philippines, and partly due to a desire to diversify its interests in order to provide additional protection for its stockholders, a decision was made to extend the scope of Benguet's operations into other fields. Due to the limitations imposed by the corporation law of the Islands, the development of other properties was undertaken under a so-called operating contract. Several other properties are now being handled in this manner.

Among these are two chromite properties, one of which, known as the Florannie mine, was the first chromite deposit found in the Philippines. Some 70,000 tons of ore, which will average better than 50 percent chromic oxide, has been shipped from this property so far.

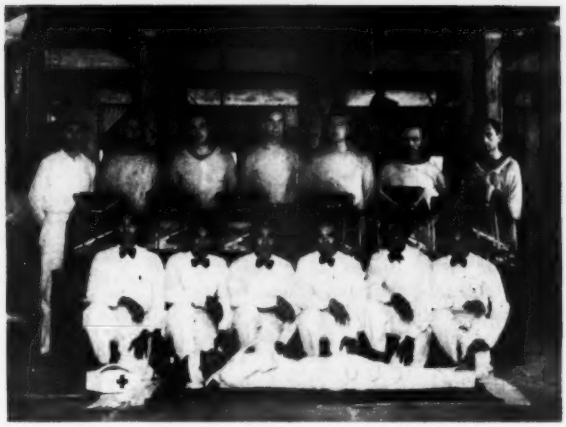
The other is known as Masinloc and is, I am told, the largest deposit of chromite in the world. This deposit forms the top of a small hill and has a roughly circular outcrop about 1,000 feet in diameter. The deposit has been thoroughly developed by diamond drilling and underground workings. The exposures thus obtained, together with those of the surface, show a chromite lens of at least 9,000,000 tons in a single body. In addition to this, there is easily another 1,000,000 tons of talus and float ore around the base of the hill. Unfortunately, this ore is not of the same high grade as the Florannie ore; its average chromic oxide content is about 33 percent. So far its principal use has been for the manufacture of refractories for which the combination of 33 percent chromic oxide and 30 percent aluminum oxide which it carries, make it particularly desirable. Lately, however, a method has been devised for utilizing this ore in the manufacture of metallurgical products. Hence, we look forward to an expansion of our business into other fields of chromite consumption at an early date.

Educating Native Labor

One of our chief problems is that of education of native personnel in mining. Aside from a handful of Igorots in the hill provinces, the Filipinos knew nothing of mining. Generally speaking, this education is an expensive process. It takes at least a year or two before a man is reasonably familiar with underground work and much longer than that to develop skilled mechanics. Eventually, however, we get some very good men. It is a great source of pleasure to walk through our extensive machine shops and see Filipinos turning out work on lathes, gear-cutting machines, electric welding, and so forth, that is just as good as anything we receive from the factory.

Native machinist. Personnel education is a difficult problem, but once trained, the natives make excellent workmen

This situation introduced another problem into our operations, possibly the most serious one we have had to face. Three years ago there was a mining boom in the Philippines. New companies were coming out daily, and each of these new companies had to have immediately a superintendent to sign development reports and a Filipino foreman in the field. Our companies, having developed the expert personnel that I have just described through years of operation, was continuously raided for expert personnel, both among the American operating staff and among skilled Filipino personnel such as mine foremen, mechanics, electricians, and so forth. In each case there was only a man or two concerned, hence almost any wages could be paid. These raids were so extensive that in a short time we found that a sufficient number of our key men had left to seriously affect our operation. Operating costs and accident rates started to go up. Since that time, many of these men have returned and others have been educated so that we are now back on a normal operating basis.



Prize first-aid crew and mine rescue crew of white mine shift bosses. Mine rescue crews are now developed among the natives

Physical Deficiencies of Filipinos

Along with the deficiencies of training found in the ordinary Filipino laborer, there are other deficiencies which are in themselves serious problems. For instance, the average Filipino weighs probably not more than 125 pounds, so that no matter how willing he may be, in many cases he is simply not physically able to do heavy underground work. Moreover, he has behind him generations of malnutrition due to a limited rice and fish diet, so that he has little stamina. We have met this problem first by issuing a daily rice ration to each of our employes, thus assuring food for him and his family, and secondly, by establishing very complete commissary stores in which our employes are given credit privileges and where they can buy not only native foods, but all of our standard American foods.

We have gradually developed in them a liking for the more strengthening foods such as we are accustomed to and a desire for a more varied and balanced diet. Accurate records of physical examinations made by our medical department show that there is a marked improvement in the general average of our laborers both in physical measurements and in resistance to disease. They will, of course, never be the equal of the American miner physically, and it will always take a great many more of them to do a specified piece of work than it would here in the States, which nullifies the effect of lower wages. In spite of the much lower wages—we pay an average of about 95 cents a day—our labor costs per ton of ore are just as high as they are here.

Oriental Philosophy Handicap to Safety

Another problem arising out of the native worker is the psychological one. Not only his mental processes, but his whole outlook on life is entirely different from ours. He has the fatalism of the Orient which makes him mentally lazy and unmindful of danger. This same fatalism makes him an individualist in his work. He will not give a helping hand to a fellow workman in trouble, nor does he expect to receive one. A man gets his car off the track, for instance. Dozens of other men will walk past him without saying a word, nor will he ask any of them to help him. He sees another man in a dangerous situation, under some bad ground, for instance. He will not warn him of the danger, and he will not expect to be warned under similar circumstances. There is no natural cooperation whatever. This attitude led to a great many unnecessary injuries to our workmen.

Gradually, however, we have developed in them an idea of teamwork and cooperation and an intense interest in safety-first movements. They like first-aid drills and mine-rescue drills, and the rivalry between teams and between different levels in the matter of safety records has become so effective that I am glad to say that our mines now show a better record than any underground mine in the United States, according to the records of the National Safety Council. Balatoc has twice passed the 500,000 man-hours mark without a single lost-time accident, while Benguet has one such record to its credit.

Another problem which can be traced to the psychology of the Oriental is his utter disregard for the future. Usually, he will not save any part of his wages. If, for instance, a man is paid $1.00 a day and it is necessary for him to work six days a week in order to support his family on that wage, a wage increase to $2.00 would usually result not in an increased income to him, but he would simply work three days instead of six days. Thus, we have the rather anomalous condition that an increase in wages results not in a more contented personnel, but in a larger labor turnover.

Igorot workmen's village at Balatoc mine. Arena for tribal dances in top center

Materials Cost Higher

Aside from our native labor problems, we also have to contend with about a 10 percent higher cost of materials, due to the long ocean freight involved. This is not all, however. Particularly in these later years when there has been almost a continual threat of shipping strikes here on the West Coast, we have been forced to carry at least a year's supplies on hand. Furthermore, due to the time element involved in obtaining spare parts, we are forced to carry spares of large items, such as Diesel engine crankshafts, for instance, a burden which in this country would ordinarily fall on the manufacturer. Thus, we have a great deal of money tied up in inventories.

In this connection, I should like to pay a word of tribute to Pan American. Their Clipper service has been a godsend to the mining industry in the Philippines. Heretofore, any drawings showing specifications so detailed that they could not be cabled, took a month to reach here. Allowing a week for reply and another month for the reply to reach the Philippines, over two months was necessary for each exchange of correspondence. Now, in addition to ordinary business correspondence, all such matters can be sent by Clipper. Furthermore, we can avail ourselves of the Clipper express service and bring out small repair parts, thus in many cases saving a month's delay. Considering the problems that Pan American has had to face in establishing this service, I think the results accomplished have been wonderful.

Power Costs Materially Higher

Another problem we have to face, which grows out of this same question of increased cost of mining supplies, is the abnormally high cost of power. A great deal is said about hydro-electric power possibilities, but I can tell you that on the Island of Luzon, at least, these do not exist. It is true that there is a much heavier rainfall than here, but this rainfall is so seasonal and so destructive that it cannot be taken advantage of in the development of hydro-electric power. As to steam plants, there are no coal resources in the Philippines. The coal now being used is imported mostly from Japan. The only solution to our power problems, therefore, lay in Diesel engines. We installed our first Diesel engines as a dry-season stand-by for our Agno hydro-electric plant of 1,500-kilowatt capacity. Now we have altogether over 10,000 installed horsepower in Diesel engines and are at the present time installing an additional 2,500 horsepower. All of the fuel oil used must be transferred from Manila in tankers about 200 miles and then hauled by tank truck another 40 miles to the mines. Power costs are therefore materially higher in the Philippines than they are here.

Political Uncertainty an Obstacle

Probably the greatest obstacle that we have had to face has been political uncertainty. During my 40 years in the Philippines, there has always been in the back of the minds of Americans in business there the idea that every item of capital invested should be predicated on a quick return because there was great possibility of limited life. This constant feeling of uncertainty as to what the future held for us, caused us to lead a hand-to-mouth existence so far as capital investment was concerned. You can readily see the unsettling effect which this would have on a mining venture.

As it has turned out, these doubts were not well founded, but you must remember that the Filipinos themselves have always been clamoring for independence, and President McKinley stated at the outset that such independence would be given them when they were ready for it. As the administration gradually passed from the hands of the Americans into the hands of the Filipinos, this uncertainty as to the future became more marked and a more immediate uncertainty arose due to the question of mine taxation. I have already told you of the uncertainty which still exists regarding the status of mining claims located before the inauguration of the Commonwealth Government, many of which contain proven ore bodies and some of which have mills built on them representing very large investments. Once this last uncertainty of the property rights of Americans both during the remainder of the transition period and after independence is removed, we will have left only the uncertainty as to mine taxation which, of course, is present in every country.

Advantages Cited

So much for our problems. I have tried to include only those points which are peculiar to our operations in the Philippines. To offset these, we have, of course, many advantages which are peculiar to the Philippines, such as the absence of cold weather,

Filipino miners drilling a round in one of the stopes

freedom from wars and insurrections, and comparative freedom from social unrest and from the regimentation which are now so seriously affecting industrial operations in this country. I must say that the Philippine Government, although still the youngest government in the world, has adopted a tolerant and fair-minded attitude towards industrial enterprises which might be emulated to advantage in many other countries. The Philippines produced in 1937 more gold than any state in the Union including Alaska, with the sole exception of California. It entered the world chrome markets, and established itself favorably in spite of the high cost of delivery of chrome ore in this country. It is estimated that during the current year the Philippines will produce 60,000,000 pesos worth of gold, and I believe this record will be easily attained.

The American mining industry may therefore be proud of its child—certainly it is a child of the American industry in every sense of the word. The industry was started by American capital and American initiative. Up to four years ago, there was still practically no Philippine capital invested in mining. The industry has been developed entirely by American engineers and geologists, and the products of the industry have been sold almost entirely in this country. Let me tell you that you have in the Philippines a very healthy offspring that is a real credit to you.

The twenty-first annual boat trip and summer meeting of the Illinois Mining Institute is scheduled for June 9, 10, and 11, 1939, leaving St. Louis, Mo., on the SS. *Golden Eagle* the evening of the 9th and returning to St. Louis on the morning of the 11th, it was recently announced by B. E. Schonthal, secretary-treasurer of the Institute.

Recent view of surface plant at the Sunshine mine

METALLURGY of the COEUR D'ALENE SILVER ORES*

● ***Differences in Ores From Sunshine, Polaris and Crescent Indicated, and General Treatment at Each Plant Outlined. High Freight Rates Necessitate Treatment at Lead Rather Than Copper Smelter***

By W. CHURCH HOLMES
Mill Supt. and Metallurgist
Sunshine Mining Co.

THE Coeur d'Alene mining district is located in the northern part of Idaho, about 80 miles east of Spokane. It is a district that prior to the development of the Sunshine, was famed primarily for its production of lead and zinc. Located roughly in the center of the district is the so-called "Dry Belt" area, which up to 1934 had been "viewed with alarm" by most engineers who had examined it.

The Sunshine property, which last year produced slightly more than 12,100,000 ounces of silver, or approximately 17 percent of the country's total production of 70,000,000 ounces, or 4½ percent of the world production of 270,000,000 ounces, is the center of activity of the Dry Belt area.

Development of Sunshine

The Sunshine property was located in 1884 by two brothers named Blake, who reputedly did all of their mining alone. The ore was hand sorted and hand jigged, with an occasional carload shipped to the smelter. They patented the claims in 1909. Somewhat later the Blakes relinquished their mining activities to leasers, but there is no record of any of these having been particularly successful, and finally D. W. Price took over the property on a lease and bond. He exhausted his resources attempting to develop the ore at a lower horizon without success. He then interested a group of Yakima men in the venture, and they took over his bond on the property in the name of the present company in 1921.

Since that time the history of the company's operations has been one of steadily increasing production from 54,000 ounces in 1921 to over 12,100,000 ounces in 1937. The rise in taxes paid has been even more spectacular, from $100 in 1921 to almost $1,700,000 in 1937. This latter figure was 139 percent of the annual payroll, or 80 percent of the total operating cost for last year before tax additions.

The total production from the mine through 1937 was 46,400,000 ounces plus, of which approximately two-thirds was produced during the four-year period covered by the government purchase of newly mined silver. The total taxes paid during this period averaged about 12 cents per ounce, while prior to this period they averaged about 2 cents per ounce.

Polaris and Crescent Produce Similar Ore

There are three producing mines in the Coeur d'Alene district whose dominant ore mineral is argentiferrous tetrahedrite, a silver-copper-antimony-sulphide. They are the Sunshine, the Polaris adjoining us on the east, and the Crescent, slightly to the northwest.

The ores from the three mines are roughly similar, all having this silver-bearing tetrahedrite as the silver mineral. They all have minor values in gold and galena and detrimental sulphides, from the metallurgical standpoint, namely, arsenopyrite and pyrite. Chalcopyrite is present but in such small amounts as to be negligible. The amounts of these sulphides and their relation to each other vary rather widely between the three properties.

Metallurgy Determined by Mineral Content and Net Smelter Return

All three mills concentrate the ores by flotation, making a concentrate and a tailing, which latter goes to waste. The metallurgy at the plants is dependent on two factors, namely, the mineralization and net smelter return. Roughly, the tetrahedrite at the Sunshine carries 3,000 ounces of silver per

* Presented to Metal Mining Convention of the American Mining Congress, Western Division, Los Angeles, Calif., Oct. 25, 1938.

ton; at the Crescent, 1,500 ounces; and at the Polaris, 1,250 ounces per ton.

For simplicity, I will discuss the metallurgy at the Sunshine first and then indicate the differences between it and the other two properties.

Mineral Nature of Sunshine Ore

The main characteristics of the Sunshine mineralization are:

First—The high-grade, free tetrahedrite, which carries the bulk of the silver and copper values in the ore and makes it possible to make extremely high-grade concentrates. For example, concentrates carrying 1,800 to 2,000 ounces of silver per ton and 22 to 25 percent copper can quite readily be made.

Second—A pyrite middling product, which carries tetrahedrite inclusions as an extremely fine intergrowth. These were identified by means of a microscopic study of the pyrite grains which showed the bulk of these inclusions to be 5 microns in diameter or smaller—so fine that grinding to minus 5,000 mesh would be necessary to free the mineral. Anything even approaching this is, of course, impossible. As this clean intergrown pyrite carries between 20 and 25 ounces of silver per ton, it governs both our concentrate grade and tailing, depending upon whether it is floated into the concentrate or rejected into the tailing.

Metallurgical Possibilities

Thus by varying our procedure as regards the pyrite, we have three metallurgical possibilities, any of which we can follow in our flotation practice:

Plan No. 1—To make a partial differential separation between the tetrahedrite and the pyrite, making a high silver-copper concentrate carrying 1,800 ounces or more silver per ton. This product would then be followed with a pyrite concentrate which would carry about 50 ounces per ton.

With a monthly production of 1,000,000 ounces of silver, we would put approximately 950,000 ounces in the high-grade product and approximately 50,000 ounces in the pyrite concentrate per month. This method would give us a tailing of about .35 ounce per ton.

Plan No. 2—To make a bulk tetrahedrite—pyrite concentrate which would carry slightly more than 600 ounces of silver per ton. This procedure would give us the same tailing at Plan No. 1.

Plan No. 3—To make a bulk concentrate carrying about 1,000 ounces of silver and 12½ percent copper by floating the higher-grade pyrite middling into the concentrate with the tetrahedrite and discarding the lower-grade pyrite into the tails. The pyrite thus rejected carries between 20 and 25 ounces of silver per ton and takes with it approximately .5 of an ounce of silver per ton of ore milled. This, added to the .35 ounce of non-recoverable silver, gives us a normal tailing of between .85 and .9 ounce per ton. As our metallurgy is tempered by the net smelter returns and this 1,000-oz. concentrate gives us the optimum net return per ounce, we follow the third plan at the Sunshine—take a lower net recovery in the mill than would be obtained by following either of the first two plans, but in so doing make more dollars.

Apparent Paradox Explained

In following this plan we have an apparent paradox in our metallurgical results which is—the higher the heads the lower the tails. The explanation of this fact is quite simple. We pull our flotation concentrate to a constant grade of approximately 1,000 ounces per ton, diluting the tetrahedrite with pyrite, and we have, roughly, a constant percentage of pyrite in the heads. Thus as the tetrahedrite in the heads increases we can float more pyrite to dilute it to the 1,000-oz. grade and inversely as the tetrahedrite diminishes in the heads we must depress more pyrite into the tails in order to maintain the grade of the final concentrate.

To illustrate the above, in August of last year our mill heads for the month were 59 ounces per ton and our tailing was .63 of an ounce, while in December of last year with our heads 39 ounces, our tailing was .94 of an ounce. The mill tailing for the year 1937, with a 48-oz. head and a concentrate grade of 1,010 ounces, was .86 of an ounce.

We have given a great deal of attention to the necessity of discarding a part of the silver locked in this pyrite middling, and various plans and schemes have been experimented with and calculated to recover it profitably. As for shipping this product, which carries 20 to 25 ounces of silver per ton, to a smelter, we have found that smelters sufficiently deficient in pyrite so that their treatment rates would be satisfactory are so far away that the freight is too high, while smelters close enough to us so that the freight would be satisfactory have an excess of pyrite so that the treatment rate is too high to allow the product to move.

Can't Risk Cost of Leaching Plant

A satisfactory recovery of the silver from the low-grade pyrite concentrate can be made by roasting and leaching, but this would require an expensive installation, and with the unstable condition of the silver market, we do not feel justified in making the investment. For example, a plant that would pay for itself in three or four years at the present silver price would operate at a loss with the price of silver down to 40 cents an ounce. Therefore, pending either stability for a period of several years in the silver price or a plan that will show us a profit at a much reduced price of silver, we reject 12,000 to 15,000 ounces of recoverable silver a month into the tailing and make money by doing so.

Polaris Treatment Less Elastic

The mineralization at the Polaris does not allow them the degree of latitude in their flotation operation that we have at the Sunshine.

First—Their tetrahedrite carries only in the neighborhood of 1,250 ounces of silver per ton.

Second—They have only a small amount of pyrite in their ore, all of which they float into their concentrate.

Third—I was told that they have tetrahedrite inclusions in the quartz portion of their gangue, which are at a fineness paralleling the inclusions in our pyrite.

Their operation is to grind as fine as is economical for them (85 percent to minus 200 mesh) in two stages, and floating the bulk of the free tetrahedrite between the two grinding stages so as to eliminate as much of the loss due to sliming as possible. In floating the ore they make a bulk concentrate, using strong frothing conditions, pulling approximately 15 percent insoluble, which includes the bulk of this middling material, into their finished concentrate. Their average concentrate is slightly more than 600 ounces of silver per ton and carries about 17 percent copper. Elimination of the insoluble from this concentrate increases their tailing loss by more dollars than they would gain by the relatively small increase in their concentrate grade.

Crescent Situation Still Different

The situation at the Crescent is still different from that at the two former properties. They ship to their own smelter, so the factor of net smelter

The Polaris mill in the Coeur d'Alene dry belt

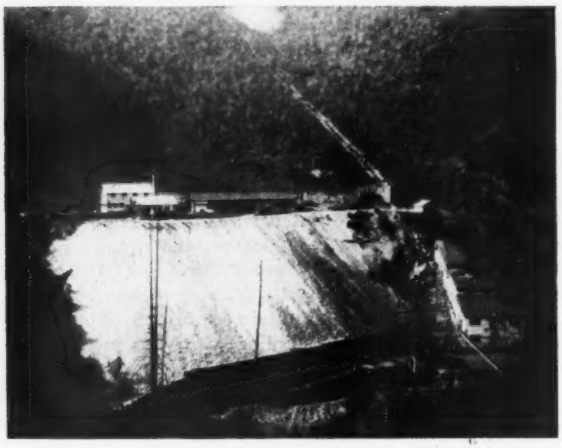
return has no particular influence on their metallurgy.

Their mineralization falls between that at the Polaris and the Sunshine.

First—Their tetrahedrite carries approximately 1,500 ounces of silver per ton.

Second—Relative to their tetrahedrite they have larger amounts of pyrite and arsenopyrite, both of which carry minute tetrahedrite inclusions that cannot be ground out. As far as they know, there is no important intergrowth between the tetrahedrite and the nonmetallic gangue minerals.

Their operation is to float a bulk concentrate carrying as much of the sulphide content of the ore as they can recover. No attempt is made for a constant grade of concentrate, and it varies between wide limits directly as the grade of the ore varies.



Surface plant of the Crescent mine of the Bunker Hill and Sullivan Mining and Concentrating Co.

High Freight Rates Necessitate Treating in Lead Smelter

The concentrates produced by the three mills are distinctly copper-plant products due to the fact that they contain four to five times as much copper as lead, high antimony, and small amounts of bismuth.

Unfortunately, the railroads still hold to the theory that the higher-grade product can stand a higher freight rate and it will still move. The theory is correct within limits, but to ship by rail for any distance a product that will be worth $700 to $1,000 a ton is usually out of the question. I understand that in some instances the railroads are beginning to recognize this fact and have made some concessions to high-grade ores and concentrates.

Due to the excessive freight rates in effect against the high-grade products, all three concentrates are treated in a lead smelter. There the high copper, high antimony, some arsenic, and particularly the bismuth, are exceedingly difficult and costly to handle.

These costs are, of course, passed on to the shipper in the smelter contracts, and the treatment charges per ton are quite high.

Leaching Process Investigated

Some time ago, to investigate an out from the above condition of high freight and smelter charges, we started experimenting at the Sunshine to find whether or not our high-grade silver-copper concentrates would be amenable to a hydro-metallurgical process.

We are not ready to discuss our results in any detail as yet; suffice to say that by roasting and leaching, a reasonable tailing can be obtained and fine silver and cathode copper recovered from the Sunshine concentrates at a reasonable cost.

Research on Silver Use

To continue the metallurgy of our silver ore through into the metallurgy of metallic silver, the Sunshine Mining Company formed in 1937 the Rare Metals Institute, Incorporated. This was done for the purpose of exhaustively reviewing the present status of silver in its industrial applications and to provide original research, the aim being to supplement and increase this use.

(*Continued on page* 41)

MINE TAXATION—A Symposium*

Introductory Remarks on Tax Matters

By HENRY B. FERNALD
Chairman, Executive Tax Committee
American Mining Congress

IF THE work of our Executive Tax Committee has been efficient and successful, it has been because of what has been done by the members of the mining industry to see that the local people at home and their representatives in the Government understood the problems the industry had to meet, appreciated the effects which taxation had or might have upon the industry and upon the life and well-being of the mining communities, and recognized the importance of dealing fairly with the mining industry in matters of taxation. We as a committee have simply tried to reflect what is the real sentiment of the people back home who are working with the practical problems which face them there. When we do this in meeting those who have some understanding and appreciation of the problems, we receive a fair and sympathetic consideration of tax questions which otherwise could not be hoped for. After all, in a democratic government it is the will of the people which controls, provided only that such will is clearly and intelligently expressed.

Rapid Expansion of Income Taxes

As we open this session, you can, if you will, consider that we are celebrating an anniversary. Twenty-five years ago, in February, 1913, we adopted the income tax amendment to our Constitution. It was adopted on representations that rates would be so low as to put no burden on any taxpayer; tax returns would be so simple as not to be bothersome to anyone; absolute secrecy would be maintained; examination and audit procedure would not be difficult for anyone who kept honest and reasonably adequate records.

HENRY B. FERNALD

All of this was true under the 1913 Act, with its 1 percent corporation tax rate and its 1 percent normal and maximum 7 percent surtax on individuals; with corporate dividends wholly exempt from normal tax.

It was also true under the 1916 Act, with its slightly higher rates. There was rarely enough involved to make disputes worth while from the standpoint of the Government or the taxpayer.

With the 1917 Act, under which rates might run as high as 60 percent or more, all this was changed. In more than 20 years we have not cleared up all our cases of dispute as to the meaning of that 1917 law. We still have pending in the Treasury or before the courts disputes as to the meaning of the Revenue Acts of 1917, 1918, 1921, 1924, 1926, 1928, 1932, 1933, 1934, 1935, 1936, and 1937. The Treasury has not yet been able to get out its regulations as to the 1938 Act, and we are wondering now what are going to be the provisions of the 1939 Act.

The Treasury Department is so doubtful as to its interpretations of the law that it insists on the right to amend, with retroactive effect, at any time, any regulations or decisions it gives, and it wants the right to some extent to reopen the statute of limitations wherever it finds that it has been wrong.

Concept of "Net Income" Still Hazy

After 25 years we still have no clear conception of what this "net income" is which it is intended to tax, and we are trying to take in real dollars sometimes as much as 75 percent of this undefined, intangible concept. Also, we find that, as to dividends paid out of earnings or profits, perhaps this term "earnings or profits" does not have the meaning that for years has been ascribed to it by the Treasury Department.

Taxes Hinder Business Enterprise

Possibly worse than all this is the fact that at a time when the Government wants to increase business incomes as a source of revenue and wants to increase employment for its people in order to enable it to reduce its expenditures, it introduces or continues tax provisions which have a directly contrary effect. We cannot expect businessmen to make new investments, to create new enterprises, or to develop or expand present enterprises, if they cannot hope for a net return commensurate with the risk involved. If, for example, a reasonable rate of return on a business investment, allowing for its risk, were 8 percent, a man subject to a 60 percent tax rate would have to figure that if he got the 8 percent yield it would only give him a 3.2 percent net return.

Furthermore, a prospective investor sees that the Government is going to take its share of profits in any year of net profits and probably leave him to stand the losses of years of loss. Under such conditions, even a 20 percent tax may make an investment unattractive.

Suppose, for example, an enterprise, mining or otherwise, were to have three years when it lost $50,000 a year and two years when it made $100,000 a year profit. For the five-year period

* The following papers by Messrs. Fernald, Borden, Alvord and Mackenzie were presented to the Metal Mining Convention of the American Mining Congress, Western Division, Los Angeles, Calif., Oct. 27, 1938.

its net profit resulting from $150,000 of losses and $200,000 profits would be $50,000. But after the Government took 20 percent for its taxes the investor would have only $10,000 as his net return for five years. He would see that he took the risk but the Government took the profits. In such a case if the tax rate were 30 percent the investor would be out $10,000 after paying his $60,000 of taxes.

Of course, I am giving you a particular set of figures. But take whatever figures you like for losses and profits and rate of tax and you can figure on how much chance there might be that anyone would be willing to make an investment in any particular case.

Situation Improved Somewhat

Congress did give some very real consideration this past year to the business features of taxation. It largely did away with the undistributed profits tax. No one can say that the existence of the undistributed profits tax was the sole cause of the 1937 depression, but it was undoubtedly a substantial contributing factor. If that change had not been made, then today every one of you who have profits in a corporation would be figuring on how many men you could afford to keep employed and how much you could afford to spend for materials and supplies and construction and equipment and still leave your corporation in a position to pay out its profits in dividends before the end of the year.

The 2½ percent remainder of that tax left in the law is going to be a terrible nuisance in figuring out the corporation tax to be paid. If any of you doubt that, just read your law and try to figure out how you are going to compute your corporation tax for this year. But, of course, the 2½ percent tax has no such serious economic repercussions as a possible 20 percent penalty tax did.

Congress also substantially reduced the capital gains tax and gave some better allowance for capital losses. There is every reason to believe this will give increased revenues to the Government from the capital gains tax and that it has done something to thaw out otherwise frozen investments so that their proceeds can flow into business channels. It would probably have been more effective in stimulating new investments if it had not been for the fear of an adverse change in the law next year.

When I was a country boy I learned that you get milk from contented cows. There might be some fun and excitement in chasing the cows around the pasture, or you might be so peeved at the beasts you would like to beat them up well. But you did not do that if you wanted to get their milk; and you did not pester and worry a horse if you wanted to get real work out of him. Perhaps we need more men in Congress who have learned these lessons as country boys, or who if they did learn them can remember them today and apply them to business taxation.

Publicize the Situation Back Home

Also, we need taxpayers who are willing and ready to tell their Congressmen and the public in plain, simple terms what these tax laws mean in practical application and how they have hurt or will hurt business recovery and employment. It was this which brought about repeal of the undistributed profits tax. It was this which has preserved the depletion allowances. A Congressman listens to the plain facts presented by the people back home as he may not listen to a stranger's presentation of them before a committee in Washington.

The Revenue Act of 1938

With Special Reference to Mining Problems

● ***Important Considerations Concerning Definition of "Property," Depletion, and Agreements for Purchase and Sale of Mineral Properties***

By GRANVILLE S. BORDEN
Tax Counsel
San Francisco, Calif.

EVERY reader of the daily press is more or less familiar with the major changes in the revenue laws enacted in the Revenue Act of 1938, and everyone needing more knowledge of any of the changes has access to a mass of literature dealing with the new law. For this reason I shall merely mention the changes, and then pass on to a discussion of some specific mining tax problems. Even though this approach will be incoherent and technical, I feel confident that it will be more interesting than a mere reiteration of the provisions of the Act.

I. Important Changes in the Revenue Laws Included in the Revenue Act of 1938

1. Reduction of the penalties for failure to distribute adjusted net income.

2. Revisions in the method and rates of taxing and treating capital net gains and capital net losses.

3. The exclusion of depreciable assets from the category of capital assets.

4. The inclusion of losses on worthless securities and bad debts evidenced by securities in the category of capital losses.

5. Under certain conditions gain on certain corporate liquidations will not be recognized.

6. Provisions relating to the mitigation of the effect of limitations in income tax cases.

7. The grant of the right to make new declarations of capital stock values every three years.

8. Provisions that the difference between depletion allowed on a percentage of income basis and depletion sustained on cost shall be added in determining adjusted declared values for capital stock tax purposes.

The reduction of the penalty for failure to distribute adjusted net income, the adjustments in rates on capi-

tal gains, the change in treatment of losses from sales to depreciable property, the grant of the right to redeclare capital stock values, and the retention of the right to measure depletion by a percentage of income were matters of much importance to the mining industry, and there is no doubt whatsoever that these amendments will be incentives to prospecting, exploration, and discovery of new natural resources and national wealth.

Let us now consider a group of heterogeneous mining tax problems.

II. The Problems of Survival

In view of the rate of governmental expenditures we can anticipate tax increases.

How will tax increases affect the ability to mine? We cannot mine without ore, and mineral-bearing rock is "ore" only when conditions of costs and prices permit its exploitation at a profit. Thus tax increases can change "ore" into waste and indirectly deplete the mine.

Furthermore, tax increases absorb funds otherwise available for exploration, and destroy incentives for prospecting. These tax increases curtail the number of discoveries of new natural resources which would be increments to national wealth, sources of jobs, stimuli to trade, and sources of profits which could again be ploughed back into the search for new ore bodies.

These general principles are common knowledge, but how many operators can demonstrate how, when, and where this economic law relates to their operations? Such analysis by the mine operators with respect to various kinds of taxes within reasonable price ranges would demonstrate the points where additional taxes will not only fail to yield more revenue, but destroy present sources of revenue, destroy jobs, invite a host of ghosts into the mine. Such statistics might be of vital importance to the employers and employes, and be very useful to the state and Federal Governments.

III. The Definition of "Property"

1. In determining taxable net income, deductions are allowable for depletion and depreciation of mine improvements.

2. Some taxpayers have elected to base depletion on a percentage of income. Others base their depletion on cost.

3. The law provides that the election as to the method of determining depletion must be made for each "property" and, in cases where the deduction is based on a percentage of income, that the allowance be limited to 50 percent of the net income from the property. In cases where depletion is based on cost, the rate is commensurate with the exhaustion of the "property."

4. Is the "property" each mineral deposit within the boundaries of the tract, group of claims, lease or freehold, or can all of the mineral deposits therein be embraced in one property?

5. The regulations of the Bureau of Internal Revenue apparently permit a taxpayer to elect whether each mineral deposit shall be regarded as a "property" or whether all of the mineral properties in a tract or parcel of land shall be regarded as a "property."

6. Mine operators engaged in mining on more than one seam of coal, lens, vein, or other deposit within one tract, group of claims, or parcel of land should give careful consideration to the problem to the end that their elections are exercised properly.

Such operations are common in coal operations where there are more than one bed or seam, the Tri-State lead and zinc district, and metal mines of the West, where there are more than one vein or ore shoot in the same property.

IV. Problems Relating to Depletion Based on Cost

(a) *The rate of depletion of the original cost of the deposit in cases where discoveries are made.*

This point can be illustrated best by an example:

Assume lands are bought for $100,000 in the belief that a coal seam exists under the north one-half containing 1,000,000 tons, and soon after the acquisition a discovery is made that the seam extends under the south one-half, and that the deposit will yield a total of 2,000,000 tons. At what rate is the capital investment impaired as the coal is mined? One taxpayer adopts the view that his cost of the coal is 10c per ton, and that his capital shall be redeemed from the first 1,000,000 tons mined. The last 1,000,000 tons will create realized appreciation.

Another taxpayer adopts the view that his capital is not impaired so long as 1,000,000 tons mined create a realized appreciation.

A third taxpayer impairs his capital on an area basis; that is, coal removed from the area which was known to exist at the time of purchase impairs capital; coal removed from the discovered area creates realized appreciation.

A fourth taxpayer adopts the rule of the Bureau of Internal Revenue that the rate of redemption shall be reduced from 10c per ton to 5c per ton when the additional discovery is made; that is, an average method.

The Revenue Act of 1938 provides that "in any case in which it is ascertained, as a result of operations or of development work, that the recoverable units are greater or less than the prior estimate thereof, then the prior estimate (but not the basis for depletion) shall be revised and the allowance under this subsection for subsequent taxable years shall be based upon such revised estimate."

This provision clears the difficult problems relating to retroactive application of estimates revised as a result of subsequent operations or development, but it does not settle the point whether the revisions shall be made with respect to the property considered proven or probable at the date of acquisition, or whether revisions shall be made for discoveries in the tract or parcel of land, or group of claims outside of the mineral deposits proven or probable at the date of acquisition.

There is some merit in the contention that the cost applicable to the proven and probable reserves should be depleted at a rate commensurate with the rate of exhaustion of the reserves proven and probable at the date of acquisition, and that the cost appliable to undeveloped prospective areas should be depleted at rates commensurate with the exhaustion of reserves subsequently discovered within these undeveloped prospective areas.

(b) *The cost base for depletion.*

For the period of March 1, 1913, to December 31, 1915, depletion was allowable at a rate of 5 percent of the gross value of the product. In most cases the depletion sustained during this period was much greater than the depletion allowable. Bureau rulings and court decisions indicate that for the period 1916 to 1931 the capital recoverable shall be the March 1, 1913, value less the depletion sustained whether or not allowable.

On the other hand, the Revenue Act of 1932 and subsequent Acts seem clear, and Bureau rulings support the view, that this difference between the depletion sustained and the depletion allowable for the period January 1, 1913, to December 31, 1915, can be added to capital recoverable through depletion as of January 1, 1932. This point is important for those who have elected to take depletion on cost or for those who have sold, abandoned, or otherwise disposed of their property since January 1, 1932.

V. Problems Relating to Depletion Based on a Percentage of Income

(a) *Depletion vs. Depreciation.*

For those who have elected to measure depletion by a percentage of income, capital expenditure incurred prior to the operating period should be segregated between depreciable and depletable capital in a manner that will ascribe the legal maximum to depreciable capital. If depletion is based on a percentage of income, the amount of depletable investment is immaterial during the operating period. On the other hand, the greater the depreciable investment, the greater the depreciation allowances. Oftentimes in accounting for the capital expenditures on underground work all such expenditures (except costs of actual materials) are charged to development and carried in the depletable column. For example, the costs of *installing* underground hoists, pumps, transformers, track, pipe, etc., are (when capitalized) depreciable capital. This may include, too, the cost of breaking, tramming, and hoisting the rock required for the underground installation; also, the cost of timbering required for maintaining the necessary excavations.

(b) *Net income from the property.*

The Government has petitioned the Supreme Court of the United States to review the decision of the Ninth Circuit in the case of *Wilshire Oil Company* vs. *Commissioner,* 95 Fed. (2nd) 971. The question involved is the interpretation of the phrase "net income from the property" as used in the sections limiting depletion deductions when based on a percentage of income. The Ninth Circuit held that development costs are not to be included as deductions in determining "net income from the property." In their opinion in *Ambassador Petroleum Company* vs. *Commissioner,* 51 Fed. (2nd) 464, a similar case which was not appealed by the Government, the court held that only operating costs shall be deducted, which clearly excludes depreciation on development equipment and possibly depreciation on all equipment.

Although there are some grounds for distinguishing a rule applicable to oil and gas wells, the rule to be established in the *Wilshire* case may apply with equal force to the determination of depletion of mines when based upon 50 percent of the net income from the property.

VI. Agreements for Purchase and Sale of Mineral Properties

The form of these agreements is often important from an income tax standpoint in cases where part or all of the consideration is payable out of mineral to be produced from the property. Whenever a property is optioned or purchased for a consideration payable out of a part or all of the value of products to be mined, the purchaser should take title only to the part which he is to retain. In other words, it is generally better that the seller reserve to himself the value of the mineral which is to be paid back to him, and not convey the entire mineral for a promise of the purchaser to pay consideration out of proceeds. By this arrangement taxes may be minimized. The purchaser is not to regard the value of products mined and received by the seller as his income. If he takes title to all of the mineral, this value might be income and the payment to the seller should be a capital investment in property. If depletion is based on a percentage of income, this capital investment is of no importance. (Cf. Perkins vs. Thomas, 301 U. S. 655, relating to assignment of an oil and gas lease.)

The effect on the seller depends upon several factors, since the income from the mineral reserved will be ordinary income and not capital gain. However, the income of the seller from the mineral reserved will be gross income from which depletion deductions can be taken. If the seller is a corporation without capital losses, it will derive an advantage by reserving title to the mineral. On the other hand, an individual who has held the property for a number of years would pay more tax than under the form where the entire mineral is sold for a consideration of payment out of proceeds.

FEDERAL FISCAL POLICIES

● ***Present System Unsound and Dangerous; Need of Greater Permanency in Revenue Laws Stressed, With Budget Committee to Fix Expenditures Within Income***

By ELLSWORTH C. ALVORD
Counsel
American Mining Congress

I HOPE that all of you had ham and eggs for breakfast this morning. I agree with what we see in the newspapers and hear in political halls, that everyone should have ham and eggs for breakfast every morning.

I might differ as to the means by which we can assure everyone of an adequate breakfast. However, the objective permits of no quarrel. With equal truth, many objectives of the present administration permit of no quarrel. We cannot criticize, for example, the goal of a $100,000,000,000 national income per year. We certainly cannot criticize the desire to attain security for everyone. Nor will anyone object to a program which will give us adequate defense against enemies both at home and abroad. But, to me, the financial soundness of your Government is the keystone upon which these objectives rest.

Presents Indisputable Facts

I can go back nine years, if necessary, to assure you that I am not talking politics. Those of you who know me are well aware of the fact that politics is not within my interests or activities. I intend to discuss facts—not political bugaboos, but indisputable facts.

For nine consecutive years, you have accumulated annual deficits averaging $3,000,000,000 a year. That is a total of $27,000,000,000, as detailed in Table 1. I see no better prospect for the tenth year. There are, of course, no available estimates for 1940. However, I predict, as I have on each of the last five or six or seven years that

I have appeared before you, that the minimum deficit for the next fiscal year—and mark the word "minimum"—will be $3,000,000,000. By June 30, 1940, you will have a public debt of at least $43,500,000,000. (See Table 2 for nine-year record.)

Perhaps we can find a basis for hope for the eleventh year. It may be my youthful optimism, or, more likely, my confidence in the common sense of the American public, when I say I know there is a way out. The way seems clear to me. I hope it will be adopted.

But let us not fool ourselves by thinking it will be easy to do. When you are spending for the present year $4,000,000,000 more than your revenues; when those revenues, though inadequate by far, are still above the average of the last 15 years; when there is, as yet, no really sincere effort to equalize outgo with income, the situation is both difficult, indeed, and serious. Either we must adopt some sane policies for correlating income and outgo, or we must face, as Mr. Borden indicated, increased taxes—and if they do not suffice, then inflation, confiscation, repudiation.

Present Financing Unsound

It is pertinent to ask: How are we financing present deficits? In two ways: We make the banks buy Government bonds and we borrow from the Social Security fund, using the proceeds of Social Security taxes for current expenses. Both methods are unsound. The continual expansion of bank credits on a large scale by Government borrowing is dangerously inflationary. The appropriation of Social Security funds for present needs is a process by which the Government borrows from itself. This process does not create a "reserve" for benefits. It is simply another method of pulling yourself up by your own bootstraps.

I am not, however, advocating a reduction in the Social Security taxes currently payable. I admit that there is great need for the revenue from these taxes at the present time. But I do think we owe it to those who hold Social Security cards to point out two things honestly and frankly: First, we have imposed a disguised income tax upon you to pay current operating expenses of your Government, not to pay Social Security benefits. We are taking about $750,000,000 annually out of your pockets for this purpose. Second, your only hope for Social Security through your Government lies in the ability of your Government to raise new funds at the time payment to you is due.

Revenue Policies Analyzed

So much for spending policies, and deficits. Let us take a look at revenue policies for a moment. As I listened to Mr. Borden discussing the problems

ELLSWORTH C. ALVORD

of depletion, I agreed with him that they are complicated and complex—but don't think for a minute that he picked the only difficult subject. You have a revenue law in force estimated to raise during the present year about $5,000,000,000. The estimates are purposely a little low. But, on the other side of the ledger, estimates of expenditures were also low. Instead of being slightly less, they will be slightly more, than $9,000,000,000. Next year, the total will be at least as large, with probable increases in rearmament expenditure, and for other purposes not now definitely fixed. In my opinion, there is no revenue system, no combination of new taxes or higher rates, from which enough can be derived to pay this annual bill of $9,000,000,000 or more.

It seems to me that we must at last come to realize that this is a permanent problem and deal with it as a permanent problem. In the guise of an "emergency," Congress in the past has adopted many tax policies which have had nothing to do with the raising of revenues. I think we may commend Congress most highly for taking a step in the other direction when it enacted the Revenue Act of 1938. But there is still much more to be done.

Need for Permanency Stressed

My first suggestion, therefore, is that we should forget emergency tinkering. Let us devise and enact a reasonably permanent revenue law, one which will be in force for at least 10 years, based upon the principle of taxation for revenue only, and upon the principle of maximum yield. An ordinary schoolboy can tell you that a tax of 10 percent on a dollar gives you 10 cents, and a tax of 5 percent on

TABLE 1.—FEDERAL RECEIPTS AND EXPENDITURES SINCE 1931.

Fiscal Year	*Total Receipts*	*Total Expenditures*	*Recovery and Relief †*	*Gross Deficit*
1931	$3,189,638,632	$4,091,597,712	$	$901,959,088
1932	2,005,725,437	5,153,644,895	.....	3,147,919,455
1933	2,079,696,742	5,142,953,627	.....	3,063,256,885
1934	3,115,554,050	7,105,050,085	4,283,000,000	3,989,496,035
1935	3,800,467,202	7,375,825,166	4,446,000,000	3,575,357,964
1936	4,115,956,615	8,879,798,258	4,203,000,000	4,763,841,643
1937	5,293,840,237	8,105,158,548	4,248,000,000	2,811,318,311
1938*	6,241,661,227	7,766,374,277	3,180,000,000	1,524,713,050
1939*	5,000,270,000	9,085,157,600	4,115,000,000	4,084,887,600
Total	$34,842,810,142	$62,705,560,168	$24,475,000,000	$27,862,750,031

* Estimated. Summation of the 1939 Budget, July 13, 1938.
† Based on the classification of items of expenditure in the 1934 Budget, without allowance for excess of repayments to Government lending agencies.

TABLE 2.—GROSS FEDERAL AND LOCAL DEBTS SINCE 1931.
(Millions of Dollars)

June 30	*Gross Federal Debt*	*Gross Debt, Including State and Local*	*Per Capita*
1931	$16,801	$35,861	$288.94
1932	19,487	38,817	310.60
1933	22,539	42,056	334.39
1934	27,053	45,876	362.29
1935	28,701	47,673	373.84
1936	33,779	52,757	410.78
1937	36,425	55,579	429.99
1938	37,165	56,165*	432.04
1939	40,650	59,650*	456.04

* Estimated.

$2.00 also gives you 10 cents. To me this means that our permanent revenue system—and other policies of the Federal Government as well—can and should be directed towards an increase of total incomes and transactions subject to tax. If we do that, we shall have a revenue law based upon the two principles I have suggested, producing maximum yields without destroying the essential productive forces of industry.

Proposes Budget Committee in House

If we can accomplish that much, I make a further suggestion on the expenditure side. On any permanent basis, it is clear that we must bring our expenditures within our estimated income. In order to do this, let Congress assume full and absolute control over expenditures, and face the revenue problem squarely each session. If we have a permanent revenue law producing maximum revenues of 6, 6½, or even 7 billion dollars, let Congress fix that amount as the permissible maximum of expenditures. This could be accomplished by having the Executive Budget submitted to a Budget Committee to be created by the House of Representatives. After consideration by this Committee and full debate in the House of Representatives, a ceiling could be placed upon aggregate expenditures in the light of the maximum revenues obtainable. It would then be the duty of the Appropriations Committee to make the separate appropriation bills conform.

While the objective of bringing expenditures within the maximum yield of revenue laws is inescapable, I realize, as a practical matter, that it cannot be done immediately. But if expenditures must exceed maximum revenues for a short period, we should not make a futile attempt to derive more revenue from taxes when we are already imposing the maximum load. Rather, we should continue to finance the deficits until we are ready to adopt and enforce a permanent solution. We might continue deficit financing for a longer period, except for two things: Our fear of the future, and the realization of the load which we are unjustifiably passing on to our children.

I don't pretend to know all the answers to this difficult problem. I do know that we must adopt some sort of a sensible system. I think the system I have suggested is the one we must adopt eventually. I merely add, why not now?

THE PUBLIC'S INTEREST in MINE TAXATION

● ***Local Communities, With Direct Stake, and All Mineral Users, With Indirect Stake, Should Be Told That Unless Mining Industry Can Continue on Profit Basis With Reasonable Taxation, Everyone Will Suffer***

By A. G. MACKENZIE
Secretary
Utah Chapter
American Mining Congress
Salt Lake City, Utah

IT IS easier to show that the state of the mining industry is a matter of general concern than it is to enlist general public interest in the question. The facts of the mining industry are much less thrilling than the mining fictions, and are not so easy to hear or read. Mining is only one of many essential industries in which the public as a whole has a vital concern, and the service rendered by mining is not so readily perceptible as the services of most of the others. Agriculture and transportation, for example, furnish services so directly and continuously apparent that no one can escape knowledge of their importance to him. Everybody learns much about them without conscious effort.

Public Unaware of Industry's Struggles and Contributions

Mining is on a very different position from industries such as these. The non-mining citizen knows little of the materials and processes which result in the commodity he uses, and the commodity itself is often so utilized as to obscure its presence as a factor in his welfare. For instance, he enjoys the improved vision he obtains through his eyeglasses without knowing that their excellence is largely due to the presence of lead in the lenses. He does not know that zinc helps to give his automobile tires their long life or that copper is frequently employed to purify his water supply. The published "news" of mining is almost always restricted to the good news, so that the average citizen learns only of the few conspicuous mining successes. These, he is told, result most through luck or through the misdeeds of "the capitalists," and operate solely to benefit "a few millionaires" of vague and distant domicile and predatory habits.

Such facts as that in my state—a typical mining area—the metal mines disburse more than 80 percent of their gross receipts within the state, pay the equivalent of 34 percent of their net income in taxes and have two and a half times as many non-millionaire stockholders as they have employes, never get to the public through these sources. Nor does such other facts as that we have several hundred mines on the tax rolls, and only a half a dozen or so that pay dividends.

The average citizen seldom learns of the multiplicity of rules and regulations to which the mines must conform—the voluminous, intricate and expensive reports they must prepare and file, and the constant struggles with which mining men are so familiar in order to produce and process enough ore of sufficient grade to keep the enterprise alive. And of the countless instances where a man has put in most of his life to find and make a mine, the general public hears only of the very small proportion which make good in a large way. It

always hears through press and periodicals of the desert rat who became a plutocrat over night, as perhaps one out of a million of them do, but not of the thousands of men who devote their earnings, their labors, their science and their sacrifices in long, patient and undramatic efforts to create a productive mine, although we know these are the men who make the most of the mines.

Broadcast That Excessive Mine Taxation Hurts Everybody

We should try to get to the public the fact that excessive taxation of mines takes money from everybody. We should endeavor to show the non-mining public that it has a direct cash interest in the question, as that is the most effective way to obtain the support of these non-mining citizens in bringing the facts forcefully to the notice of those who create and administer the tax laws.

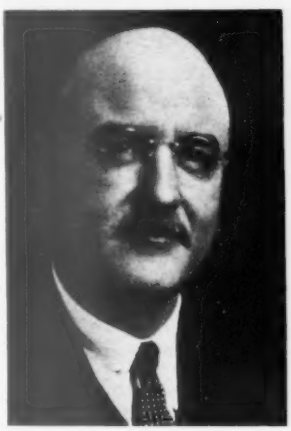
This will not be accomplished by this speech, by this speaker or by any individual or group. It is something that every mining man in the country should keep constantly in mind, and he should take every opportunity to make the facts more widely known. Each one of us can tell his own story more effectively than anyone else can tell it for him, and men are always articulate when they know what they are talking about.

I have already indicated, and I recognize, that the facts of the other fellow's business are unexciting, but when they have a wide significance they appeal to thinking people. We have demonstrated this in my state, where the mining people have had several conferences recently with representatives of some of the most intelligent and influential groups of non-mining citizens, who have taken the trouble to learn much about our problems as we have tried to do about theirs. All of us have laid our cards on the table at these conferences, have agreed we have many common problems, and are endeavoring to formulate a program which we are convinced will be for the good of all of us.

Startling Tax Examples

In our presentation of the economic signficance of mining, we can forget the man who is not tax conscious. If he is not conscious of taxation in this country today he is not conscious of anything. Not when one notes, as I did in three days of my ordinary reading recently, that purchasers pay 53 different taxes on a loaf of broad, 126 taxes on a pair of shoes and 216 taxes on gas and oil; that if all incomes of $1,000,000 or more in the United States in 1937 were turned over in their entirety to the Government they would not pay expenses for 48 hours; that 150 large corporations in varied lines paid an average of $1.45 a share to their stockholders and an average of $2.62 a share in taxes; and that the country as a whole pays one-fourth of its total income in taxes. I have already mentioned that the metal mines in my territory pay 34 percent of their income in taxes, which indicates that this industry is well above the national average given.

Now let us take a look at the state of the mining industry in the United States. This need not be elaborated before a mining audience, but a statement of what has happened to us as a world producer of gold, silver,



A. G. MACKENZIE

copper, lead and zinc as compared with former years will help us to see how things are going. I use the five metals named as the ones about which I am best informed and as the ones of most importance to this group.

Decline as Metal Producer Partly Due to Heavy Taxes

Our proportion of the world production of these five metals shows an average today of only 26 percent as compared with 47 percent 20 years ago, a loss of almost 50 percent; and the downward trend has been steady. Our rank as a gold producer has declined more than 7 percent; as a silver producer 16 percent; as a copper producer 30 percent; as a lead producer, more than 22 percent, and as a zinc producer 30 percent.

We know this decline has not been due to exhaustion of domestic ore supplies. And we know it is not due solely to domestic taxes and their application. But we do know that taxation is one of the factors and a considerable one for the reason that taxation has become a major item in cost of production and restriction of mining investment in this country, with consequent effects on the position of the United States as a world competitor in the non-ferrous metal field.

I have just indicated something the public should know, that this country is only a part—and as I have shown a diminishing part—of the world picture. Our producers do not and cannot control the markets for their metals, but must meet foreign competition or quit. Every added item of expenditure, whether taxation or anything else, imposed on the industry here strengthens the position of the foreign competitors.

Mining is the essential industry in many communities, especially in the west, vital not only to those who invest in the mines but to those employed in them and to the local public; and this interest goes far beyond the local community to include the users of the metals, which takes in everybody. But, for the present, let us consider only the mining industry and the mining areas, and say some things well known to mining people which should be made known to the rest of the public.

How Excessive Mine Taxes Hurt Communities

When taxes are such in amount or in nature that they hurt the operation and development of mines and discourage investment in them, they hurt the entire community. Unless there is enough profit in the mine investment, development and operation to justify the risk involved, the industry will not expand or prosper and the Government will not obtain revenues from it or from the others in the mining communities, which will no longer exist; and the public will have to take up the slack thus created. If those now engaged in mining or those who contemplate investing or otherwise engaging in it must look to a future where too large a proportion or all of the earnings are to be taken in taxes, the incentive to continue mining is gone.

Tax methods, as well as tax volume, are part of the picture. Arbitrary definitions of income, arbitrary limitation of deductions for losses or for expenses can have the same effect as increased tax rates. Thus, proposals to take heavy taxes from profits with

little or no recognition of losses may mean that with the taxes taken by the Government and the actual, though unrecognized, losses, there will be nothing at all left for the industry. Inadequate recognition of depletion means that capital as well as income is being taxed, and the same is true of inadequate recognition of depreciation and of development expenses.

An allowance of the right to carry forward the losses of one year as a deduction from income of a succeeding year is essential to fair treatment of the mining industry. A mine keeps going during a period of losses because it hopes to make profits in subsequent years. If it did not have this expectation, it would shut down and quit. When it keeps going during a period of losses, these losses are as much a part of its costs as are the expenditures made during a period of profit. It is not fair for Government to take its large slice of the profits without taking into account the losses which are a necessary and unavoidable part of the operation which gives rise to the profits.

It is not in the public interest to have the Government or its agents look merely at the Government's needs or desires for additional revenues. It is in the public interest, as well as in the interest of justice, to consider the situation of the taxpayer. When taxpayers conclude that taxes are too high, revenues fall off. Some of our contemporary statesmen and economists apparently have not found this out yet.

Many Believe Point of Decreasing Returns in Mine Taxes Has Been Passed

It is not easy to state in exact figures when taxes become too high. The taxpayers figure that out for themselves, each with reference to his individual situation; but there is a point at which each one will lose his incentive to continue ownership or operation. Beyond that point, taxes are too high, and tax revenues decline. Many investors have concluded that the point has been passed in mine taxation and are looking elsewhere.

The question is not merely the situation as of today. It takes years to make a productive mine and years to recover the investment therein and derive a profit. It is especially important in such an industry that we should be able to look to the future with some sort of confidence. The sort of confidence that will be most efficacious will be based on a belief that present tax laws are fair and reasonable, and that they will continue to be so. The tax record of the last few years has not instilled that sort of confidence, although the final action of the recent Congress did give some hope of a more reasonable and rational policy in the future—a hope that will vanish if the next session, or succeeding sessions, fail to show an appreciation of the taxpayer's situation and a disposition to treat him fairly and reasonably.

Confidence is not stimulated by the continual uncertainties and changes in interpretation of such statutes as the Federal income tax laws. An interpretation given when such a transaction takes place or when the tax return is filed is often not the same when the tax return is examined and settlement has to be made. There is evidence of a straining to get interpretations that will take more money from the taxpayer, no matter how unnatural or unjust such interpretations may be, so that the taxpayer's uncertainty as to what his tax liability may ultimately be decreases his confidence and adds another element of risk to his business.

Stake of Local Communities

Now then, how does all this become a part of the public's interest, particularly that part of the public which is not directly engaged in mining or directly dependent upon it? Throughout the mining states, it is generally recognized that the entire community suffers if mines are not active. Even the smallest towns that sell groceries or dry goods, or hardware, or books, or any other kind of merchandise, know that their business suffers whenever mines are suffering. This is true whether they look for business directly from those who are employed in the mines or from others in their communities, for the whole community feels the effect of the mine shutdowns or curtailments. If the stores in the mining areas cannot sell their goods, they do not buy, and the cotton mills of the south and printers in New York will feel the curtailment. There is no part of the country that does not feel a curtailment of purchasing power in the mining sections. For this reason alone, the entire country has a real interest in the prosperity of the mining section.

Stake of Mineral Users

Furthermore, everybody — mining and non-mining—has to have the metals and has to pay for them. If mining costs are increased in this country, people must expect to pay more for their metals. This is true whether they are buying metals produced in this country or metals produced abroad, for the higher the price for metals produced in this country, the higher in the end will be the price here for foreign metals. We can only keep a large supply of metals continually available in this country at reasonable prices if mines can earn reasonable profits commensurate with the risks involved, and that means profit after taking all taxes into account. Every citizen of the country, in the west or the east, the north or the south, is a consumer of metals, and, whether he realizes it or not, has a real personal interest in the mining industry.

Need of Getting This Message to Public

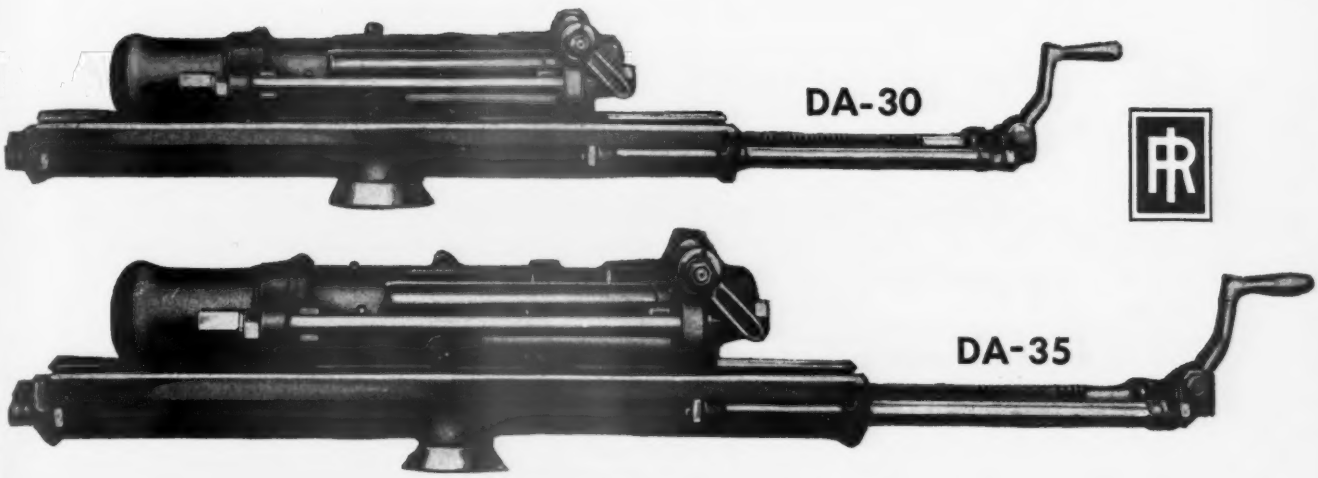
So we have this situation: We have a well-conducted domestic industry which is a large employer of labor, a large consumer of the goods and services of others, a large taxpayer and a vital national asset. It should, as it does, bear its share of all public burdens and responsibilities; but they must not be allowed to remain excessive, and those who impose them must recognize that the nature of mining makes it more sensitive and vulnerable than many other human activities. They should especially recognize that to overload this industry is not merely an injustice to it but a loss to the entire public. And the public should be shown that unless the mining industry can continue and continue on a profit basis with reasonable taxation, the public will lose money.

We should tell these things to the public in any way, in any amount and as frequently as may be indicated by the circumstances. Those who will not listen would be of no service in any event, and I believe most of those who do listen to an adequate presentation will comprehend the situation and realize that, to the extent mining does not pay, someone else must pay.

New Trucks For Cuyuna Ore Company

Six new trucks rated to carry 16 long tons per load, have been purchased by the Cuyuna Ore Company on the Cuyuna iron range, Minn., operated by Pickands, Mather & Company. These will serve the Mahnomen iron mine at Ironton, Minn., and will be delivered in the spring at the opening of the ore season for operation in the open pit.

The Fastest Drill means the Most Profit to you



DA-30 Drifter operating in a drift in a western metal mine.

IT'S the great drilling speed that makes these new drifter drills such marvelous money savers. Out-of-pocket expenses for a shift are about the same, regardless of the drills used, hence, by selecting the machine that will turn out the greatest footage, a minimum cost per foot of hole is obtained.

We invite a comparison of the "DA" drifters with any drills you are now using. An investigation will show that the speed and efficiency of the "DA" line will enable you to make substantial savings. Each additional 5% more drill hole per shift gives you the price of a new drill.

Our representative in your district will be glad to cooperate with you in any study you may wish to make.

New York State Board of Standards and Appeals approval No. 2342.

Ingersoll-Rand

11 BROADWAY, NEW YORK CITY

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Cincinnati	Houston	Pittsburgh	Tulsa
Cleveland	Kansas City		Washington

700-3

With the COAL DIVISION

of the AMERICAN MINING CONGRESS

DAILY REPORT FORMS for CONVEYOR OPERATIONS

● ***Recommended by the Committee on Conveyor Mining***

THE suggested forms for "Conveyor Daily Face Reports" which are submitted here are recommended as a convenient and effective method of keeping daily records of the items that should be taken into account in determining the efficiency of a conveyor operation. These forms are designed to furnish a means by which a superintendent or higher executive may keep in daily touch with the operating performance of the individual crews and conveyor units. Daily or period summaries of these data can be compiled, covering all the units in a mine in whatever manner the management desires.

The desire of the committee in submitting this report is to serve two

SUPPLIES NEEDED

(This list to be printed on reverse side of Forms A and B)

Posts (Inc. caps)_____

X Bars_____

Sticks Powder_____

Detonators_____

Oil_____

Grease_____

Ventilation Tubing_____

Brattice Cloth_____

Machine Bits_____

Shear Pins_____

Conveyor Pans_____

Conveyor Chain_____

Pan Bolts_____

Fuses_____

CONVEYOR DAILY FACE REPORT FORM A

(Suggested size for this form 4½" x 7")

MINE NO._____ SECTION_____

Conveyor No._____ Date_____

Shift No._____ Started_____ Finished_____

Location Room_____ Entry_____

Condition at Start Shift_____ End Shift_____

Width of Face_____ Height of Coal_____

Conveyor Length_____ Pans on_____ Pans off_____

Cuts made_____ Cleaned up_____ Cars coal_____ Cars rock_____

Feet of Advance - Coal_____ Rock_____

Explosives - No. Sticks_____ No. Caps_____

Conveyor Moves_____

Supplies Needed - See reverse side this sheet

Repairs Needed_____

Delays_____

Crew	Check No.	Name	Rate	No. Hours
Leader				
Boom				
Loader				
Loader				
Loader				

Foreman

—Submitted by L. H. Schnerr

purposes. First, to point out the items that must necessarily be considered in determining a conveyor cost or the efficiency of a performance; second, to encourage among conveyor operators the adoption of uniform methods of figuring results that will enable accurate comparisons to be made between different types of conveyor mining.

The recommendations made here are a correlation of the ideas of a number of companies that have been using conveyors for quite a few years. In conducting this study the committee found that among these companies, while there was a considerable variance in their methods of keeping records, there was a close agreement as to the basic items that must necessarily be considered in a cost or performance figure.

It is not the intention to have these forms include every item of labor cost that enters into a conveyor operation, but rather to include only those things which experience has shown to be the fundamentals or essentials. In any conveyor operation, conditions will arise where it becomes advisable to subject some particular unit or some operating phase of a unit to a detailed examination and, in such cases, a special form will be needed. In the experience of the Committee, however, these special reports are generally for temporary use only, until the particular situation in question has been corrected, and since there are apt to be so many special cases arising in different mines and under various conditions, standard or uniform report forms for such purposes are not recommended.

The Committee has confined its study in formulating these reports to the recording of performance data in physical terms. Data involving rates, costs, etc., have been excluded in the belief that the report will serve the intended purpose better, from the standpoint of comparison and interchangeability, if confined to physical terms of measurement.

The Committee recognizes two main types of conveyor operations, viz: single units and multiple units. Hence a report has been prepared for each type, similar in essentials but different somewhat in details. The shorter form, (A) covering single units, will presumably be filled out by the conveyormen. The longer form, (B) covering multiple units, is designed to be filled out by the direct supervisor of the conveyormen, and blank spaces have been provided for the addition of information that may be locally desirable.

The Committee frankly recognizes the impossibility of designing a form within practical physical limitations that will cover the wide variation in conditions and practices encountered in conveyor operations. Doubtless some operators will find it unnecessary for their own purposes to record data for all items, while others will find items not listed which are, for their purposes, essential. The Committee, however, has as its objective the design of forms that will convey information valuable for comparative purposes between operations.

In order to keep the size of the forms within desirable limits, the list of routine supplies is shown on the reverse side. It is suggested that this arrangement will be found convenient for the use of the average workman, and that the printed list of items may serve to remind him to order items which may have otherwise escaped his attention.

Approved Dec. 2, 1938.
Committee on Conveyor Mining,
T. F. McCarthy, *Chairman.*

CONVEYOR DAILY FACE REPORT FORM B

(Suggested size for this form 8½" x 11")

MINE _____ SECTION _____

Shift No. _____ Starting _____ Finishing _____ Date _____

	Unit 1	Unit 2	Unit 3	Unit 4	Add columns for additional units	TOTAL
Location						
Kind of Mining						
Width of Face						
Height of Coal						
Condition of Place Beginning of Shift						
End of Shift						
Cuts Made						
Cuts Cleaned Up						
Cars Coal Loaded						
Feet of Advance Coal						
Cars Rock Loaded						
Feet Advance Brushing						
No. Sticks - Explosives						
No. Detonators						
Conveyor Length						
Pans or Sections - On						
Pans or Sections - Off						
Crew Leader						
No. of Men or Man Hrs.						
Moving Conveyor - Man Hrs.						
Repairs - Man Hrs.						

Supplies Needed - See reverse side this sheet

Conveyor Moves _____

Conveyor Delays _____

Repairs Needed _____

Remarks _____

Superintendent _____ Foreman _____ Section Foreman _____

—Submitted by C. P. Brinton and R. E. Kirk

DAILY REPORT FORMS FOR MOBILE LOADING MACHINES

● ***Recommended by the Committee on Mechanical Loading***

WITH the installation of mobile loading, multiple shifting and corresponding concentration of working places it becomes essential that records be kept of the various items affecting the productivity of these machines. The form that is submitted here is recommended by the Committee as containing the items that are generally applicable to most mobile loading installations when loading directly into mine cars, but the Committee recognizes that local conditions may, in some cases, require some modifications in these items listed.

This report is to be kept by the unit foreman for the purpose of reporting to the superintendent and general mine foreman the major items affecting the efficiency of the loading machine and unit crew performance from the face to the point beyond the room switch where cars are delivered by another locomotive. It also provides for a report on the condition of the section for the following shift, so that in multiple shift loading, the delays in starting to work may be kept at a minimum.

The information furnished on these forms is sufficient for compiling the daily, weekly or monthly summaries that may be required for the general or detailed information of the superintendent and the operating executives.

The daily reports are recommended to be pocket size, and to be made out in triplicate with copies to the superintendent and general mine foreman, with one copy retained by the unit foreman. Each unit foreman codes the condition of the section at the end of his shift on the next shift's reports. This enables the on-coming foreman to expedite the work in the various places with very little delay in starting.

Delays to the loader should include only those delays that affect the loading of coal. The elements correspond to the items of delay shown in the Instructions for Time Studies, and are listed as follows:

(1) Haulage: (a) car off track; (b) repair track; (c) wait on cars; (d) rerail; (e) bad order car; (f) locomotive failure.

(2) Preparation: (a) tight coal; (b) slate down on coal; (c) bad shot; (d) redrill and shoot; (e) timbering.

(3) Natural conditions: (a) bad roof; (b) clay veins.

MOBILE UNIT DAILY PRODUCTION REPORT

MINE _____ SECTION _____ DATE _____

Shift Worked From _____ AM/PM To _____ AM/PM Crew No. _____

Loading Machine No. _____

Cutting Machine No. _____

Service Locomotive No. _____

DELAYS TO LOADER	MIN.	MEN IN UNIT	Regular	Extra
HAULAGE		LOADING		
		SERVICE HAULAGE		
PREPARATION		CUTTING		
		DRILLING		
NATURAL COND.		SHOOTING		
		TRACK		
CONFLICT		TIMBER		
		SLATE		
MECHANICAL		CLEANUP		
POWER				
OTHER CAUSES(Give Details)		UNIT FOREMAN		
		TOTAL		
TOTAL DELAYS		TOTAL MEN IN UNIT		

KIND OF PLACE	Loaded	Prepared	CARS LOADED	Loader	Hand
ROOMS			COAL		
ENTRIES			SLATE		
CROSS CUTS			TOTAL		
PILLARS			TOTAL		
TOTAL			ALL CARS		

REMARKS _____

See Other Side

UNIT FOREMAN _____

The reverse side of this sheet should have a printed sketch or diagram showing the arrangement of the working places operated by the unit. At the end of each shift the foreman should mark on this sketch, for the information of the on-coming foremen, the condition of the places and the location of the machines, using a code as indicated below. This code can be modified to suit local needs

Location of Machines	Condition of Place	Deadwork
C.M.—Cutting Machine	C.—Cut	S.U.—Slate Up
L.M.—Loading Machine	D.—Drilled	S.D.—Slate Down
G.L.—Gathering Locomotive	P.—Prepared	T.—Timbered
C.D.—Coal Drill	C.U.—Cleaned Up	R.—Rails Laid

(4) Conflict: (a) block by cars, locomotives, cutters, drills, etc.

(5) Mechanical (loader): (a) mechanical breakdown; (b) electrical breakdown; (c) lubrication; (d) cable.

(6) Power: If possible, give cause of trouble such as low voltage, wire down, etc.

(7) Other causes: give details.

There are two columns on this report for listing men employed in the unit: Column No. 1—Regular men in crew, and column No. 2—Extra men that would be required due to encountering conditions that could not be handled by the regular crew.

Submitted December, 1938, by *Subcommittee on Section Reports*, E. W. Potter, chairman.

Coeur D'Alene Silver Ores

(*Continued from page 28*)

The results of this survey show that the greatest industrial use of silver is in the photographic industry, which uses approximately 8,000,000 ounces annually, while the second most important use is in silverware for ornamental purposes. Third in this list is its use in alloys for electrical contacts, and fourth, in the chemical industry. Its use in the chemical industry varies from the use of silver vessels to withstand corrosive compounds to its use in the sterilization of fruit juices and water and as silver compounds for medicinal purposes. Silver is used to some extent in solders and there has been some consumption in special paints and lacquers.

Experiments are also being conducted by some of the automobile manufacturers investigating the use of silver alloys for bearing metals.

It has been estimated that some 30,000,000 ounces of silver are used commercially in this country annually.

There is another important investigation under way known as the American Silver Producers Research Project operating through the Bureau of Standards at Washington.

These several research organizations, while independent of each other, keep in close enough touch to avoid duplication of effort.

The work of the Rare Metals Institute is being done at the California Institute of Technology, and its investigations have been concerned up to the present primarily with the making of a tarnish-resistant sterling silver, the bonding of silver to steel, and the use of dispersed silver as an absorbent.

I might add at this point that any questions relating to these latter research problems will of necessity need to be addressed elsewhere, as I am not at all qualified to discuss them. I have spoken of them merely to show what is being done by the silver producers in their own behalf, attempting to find an outlet for the heavy silver stocks hanging over our market.

I will also leave to others, far better informed than I, a discussion of the place of silver in the monetary systems of the world, but with the hope that something can be done to stabilize its price and consumption in that direction.

Boost In Idaho Mine Tax Defeated

By a decisive vote a bill calling for an increase in the Idaho state mine tax from 3 percent to 5 percent was recently killed in the State's House of Representatives.

At a public hearing held on the bill previous to its final disposition, figures were presented to reveal in striking manner how the Idaho mining industry pays the highest taxes in proportion to its earnings of any industry in the State. These were presented in chart form by Jess B. Hawley, Boise attorney, representing the Idaho Mining Association—an organization composed of mine operators, prospectors and others interested in the welfare of the industry.

Empire Star Developing Deep Gold Ore

An extensive gold ore belt in deep levels of the historic North Star mine is being developed by the Empire Star Mines, Ltd., at Grass Valley, Calif. Last year an underground hoisting plant was installed on the 9,800-ft. level which serves a winze shaft. The new levels, now about 10,000 ft. deep, on the incline, identify the property as the deepest gold mine in North America.

Empire Star Mines Company leads all other producers of gold in California, operating the Empire, Pennsylvania, Murchie and North Star gold mines in the Grass Valley-Nevada City district. The company is a subsidiary of the Newmont Mining Corporation.

Additional Safety Trophy to be Awarded

Further recognition of outstanding achievement in the prevention of accidents to men employed in the mineral industries of the United States has recently been assured through the provision of an additional safety trophy to be awarded yearly by the Bureau of Mines, United States Department of the Interior. Heretofore five bronze trophies, known as the "Sentinels of Safety," have been awarded annually by the Bureau of Mines to the winning companies enrolled in the National Safety Competition, a yearly safety contest in which the competitors are companies operating in groups classed as bituminous-coal mines, anthracite mines, metal mines, nonmetal mines, and quarries and open-pit mines. The National Safety Competition has been conducted by the Bureau of Mines for some years in connection with its general program of promoting safety in mining and quarrying.

The bracketing of quarries and open-pit mines in the same group has worked a hardship in the past, because the leading operation in safety achievement in each of these groups could not be appropriately recognized. The additional trophy has, therefore, been provided by *The Explosives Engineer* magazine, the donor of the trophies, in order to permit suitable recognition of the leaders in both groups. The new trophy is already available for award to the winning quarry in the National Safety Competition of 1938, the results of which will be announced in the near future by the Bureau of Mines.

Safety Code for Compressed Air Machinery

The American Standards Association recently announced completion and approval of the first safety code for compressed air machinery and equipment. This code is designed to cut down the number of accidents resulting from the wide use of compressed air today for rock drilling, for mining machinery, for cleaning, chipping, hoisting, and numerous other industrial applications. Nineteen national organizations and two departments of the Federal Government have participated in its development under the administrative leadership of the American Society of Mechanical Engineers and the American Society of Safety Engineers.

Although safety is often aided by the substitution of compressed air for hand labor, its use introduces other hazards that can be eliminated only by proper knowledge and care. Because of the accidents that have resulted from the misapplication of compressed air equipment, the installation of unsuitable, unsafe or faulty equipment, and the failure to maintain and operate equipment safety, a number of states and municipalities have adopted regulations for its use. The present code, which has been developed out of the combined experience of manufacturer, user, insurance and governmental groups, is designed to serve as a guide to such authorities. It is also intended for voluntary use by concerns manufacturing or utilizing compressed air machinery and equipment, and its recommendations may easily be followed by superintendent, foremen, designers, mechanics, and operators.

The code is being published by the American Society of Mechanical Engineers in a nine-page booklet. It includes specific recommendations for the construction and use of compressors, tanks, pipe lines, etc., with separate sections on receivers and on utilization apparatus. It may be obtained from either the Society of Mechanical Engineers or the American Standards Association, 29 West 39th Street, New York City, at a cost of 30 cents.

Barge Fleet Enlarged

The Raymond City Coal and Transportation Company, of Raymond City, Putnam County, W. Va., will add 24 barges, 2 digger boats and a fuel boat to its river transportation fleet in the near future, according to an agreement filed recently at the county clerk's office for recording.

WHEELS of Government

● *As Viewed by A. W. Dickinson of the American Mining Congress*

TWO months of the present session of the National Congress have passed, and the Administration has entered upon the last two years of the second term of the President's incumbency. During the nine weeks in which the Congress has been at work, rebuffs to the Administration have followed one upon another. First, the House and Senate cut heavily into the requested relief appropriation; next, the Senate rebuked the President by a vote of 72 to 9 in support of S nators Glass and Byrd in a refusal to approve the appointment of a Virginia judge, and now strong resistance is indicated against the nomination of Thomas R. Amlie, of Wisconsin, and J. Haden Alldredge, of Alabama, to the Interstate Commerce Commission. Out of a White House conference with members of the Senate Committee on Military Affairs as well as from a further press conference came vigorous charges that the Administration was involving the United States in the European military situation. This again was followed by a furor over conflicting reports concerning French purchase of American military airplanes.

Following a week of seclusion, the President left Washington the latter part of February, and boarded the cruiser *Houston* at Key West, Fla., to review naval maneuvers in the Caribbean Sea. Immediately thereafter the two-day-a-week short sessions of the Senate ceased, and the solons settled down to work. Majority Leader Alben Barkley pleaded for harmony in the course of two majority caucuses, and there is now every indication that he is driving to end the present session of Congress as early as possible.

Taxation

Significant declarations favoring a policy to encourage business enterprise was made by the President, in departing from Florida; by Secretary of the Treasury Morgenthau in Washington, and by Secretary of Commerce Harry Hopkins in a speech made recently in Iowa. There is now considerable evidence to indicate that there is no intention of carrying on with a general revenue bill in the present session. The undistributed corporate earnings tax, the remains of which will automatically terminate as of January 1, 1940, is not even mentioned.

National Labor Relations Act

After announcing February 25 that hearings would be held March 10 on the proposed amendments to the National Labor Relations Act, Senator Elbert Thomas, of Utah, chairman of the Committee on Education and Labor of the Senate, suddenly announced on February 27 that the hearings had been indefinitely deferred. He gave as his reason the fact that the President had called upon the A. F. L.-C. I. O. factions to adjust their differences for the best interest of business enterprise, labor and the consumers. The Senator expressed the feeling that consideration of amending the Wagner Act, and particularly of the specific amendments introduced by Senator Walsh, of Massachusetts, and sponsored by the A. F. of L., would be most untimely under a situation where labor's house is divided. It is well known that the C. I. O. is vigorously opposed to opening the Wagner Act for amendment in any form. Representatives of the C. I. O. admit that the Wagner Act can and should be improved, but they are on the defensive and feel that they must maintain their positon in the present session.

Wage-Hour

In the latter part of February the first criminal indictment was returned in the State of Massachusetts under the Fair Labor Standards Act of 1938. A charge of falsification of records and alleged underpayment of workers was placed against a shoe-stitching company. At about the same time, a Labor Department examiner functioning under the Walsh-Healy Government Contracts Act took action to prevent a manufacturing company from participating in any further Government contract, and recommended that the firm operating in New Jersey return $31,958 to employes for back wages. The charge was failure to pay for overtime and falsification of records.

In a bulletin devoted particularly to the averaging of hours provisions, Section 7 (b) (2), the Wage-Hour Division of the Department of Labor stated that when an employe is worked in excess of 1,000 hours in 26 weeks, the provisions of the act which permit averaging of weekly hours under collective bargaining agreements are not complied with. This interpretation states that in such cases the employer is liable for overtime for every hour in excess of 44 hours worked in any week during the 1,000-hour period, the amount of such overtime payments to be doubled under the penalty provisions, and this of course also applies to the 2,000 hours contemplated in the 52-week agreements.

T.N.E.C.

The Temporary National Economic Committee, under the chairmanship of Senator O'Mahoney, of Wyoming, has devoted the past month to hearing presentations by the Securities and Exchange Commission, and examining officials of insurance companies. The Federal Trade Commission began on February 28 a presentation covering the information they have assembled on several of the major industries. After three days of general presentation the representatives of the Federal Trade Commission intend to proceed for probably two weeks on matters pertaining to the steel, rubber,

sulphur, gypsum, and one or two other industries. It is understood that their presentations on building construction and oil and gas are to be deferred until the Department of Justice presentation can be made jointly with that of the Federal Trade Commission.

Strategic Minerals

As the result of the stress being placed upon national defense, the early enactment of legislation providing for the purchase of strategic and critical minerals now seems a certainty. The Thomas bill (S. 572) will soon be subject to action on the floor of the Senate. This provides not only for an appropriation of $25,000,000 annually for four years for the purchase and stockpiling of materials, but also for a $500,000 appropriation to the Bureau of Mines ($350,000) and the Geological Survey ($150,000) for work on exploration, development and beneficiation of domestic sources of supply, including low grade ore deposits. The House Committee on Military Affairs is holding hearings on the May (Dem., Ky.) bill which provides similar appropriations for purchase, but does not contain the Bureau of Mines and Geological Survey clause.

Stream Pollution

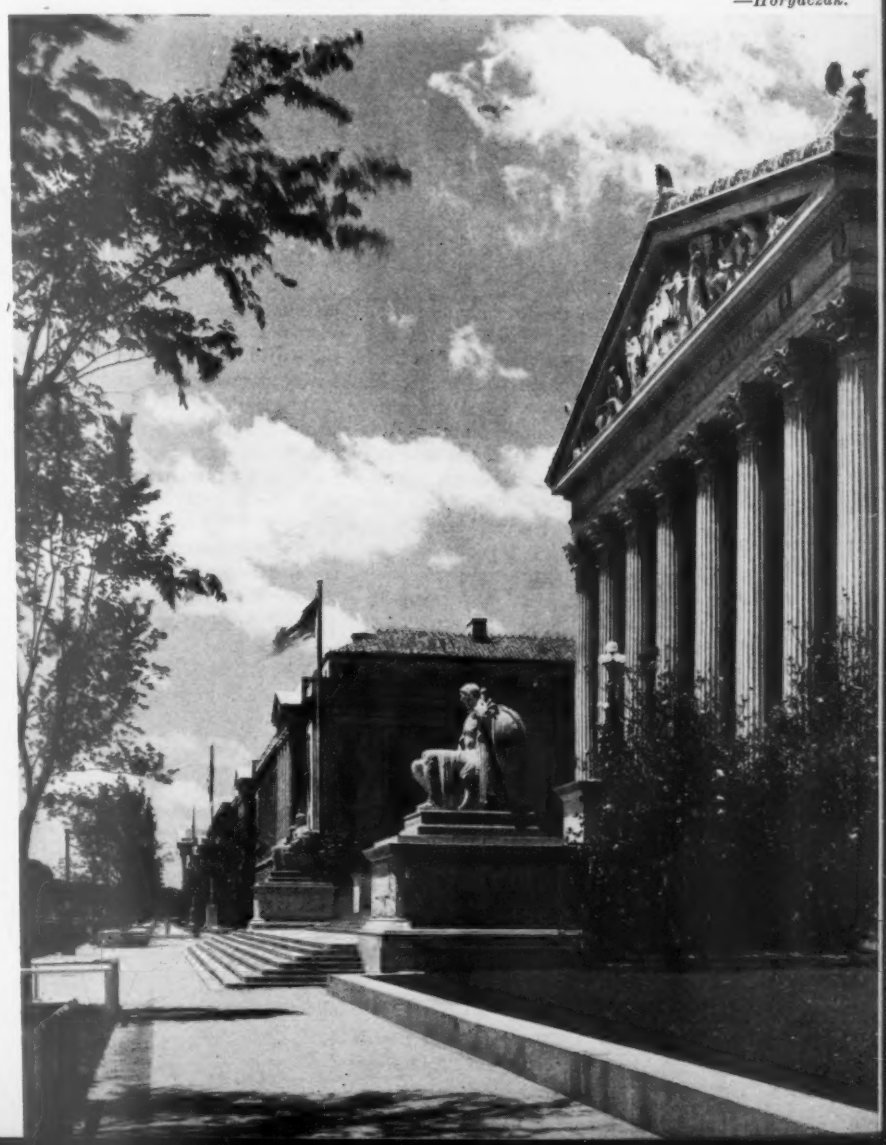
Early action is in order on the Barkley-Spence bill, which is really the Vinson bill of last year altered to meet the President's desires with reference to budgetary control of loans and grants-in-aid. In the meantime Chairman Mansfield, of the House Committee on Rivers and Harbors, has introduced "by request" what is known as the Wohlman bill which has the approval of the Bureau of Public Health. Although it contains much administrative detail, it is not harmful to industrial enterprise. Hearings have been called by the House Committee on Rivers and Harbors for March 3 on the several stream pollution bills which are now before that committee. It is quite possible that by the time the hearings are concluded the Barkley bill will have come over from the Senate; and that the Committee on Rivers and Harbors may then substitute the Barkley bill for the bills which it has under consideration, and report it out for House passage. It is believed that such an action would meet the approval of the Committees of the two Houses and thus dispose of the subject of stream pollution at least for the present session of the Congress.

Bituminous Coal

With a bad business year in 1938 this industry is again in a serious position. The wage and working agreement with the United Mine Workers of America expires March 31, and the negotiating committee of operators and miners is scheduled to meet in New York on March 14. In the meantime the National Bituminous Coal Commission is struggling with the task of fixing prices, but there is no immediate prospect that prices can be announced. It may be August 1 or even September 1 before the announcements can be made, and it is quite possible that a flood of injunctions and restraining orders will follow. Operators representing approximately 150,000,000 tons of production, feeling that their situation is desperate, have formed a Committee for Amendment of the Coal Act, with John Howe, executive vice president, Traux-Traer Coal Company, Chicago, as chairman. The committee plans the introduction in Congress of a bill to amend the present National Bituminous Coal Act by removing the present price-fixing provisions and broadening the treatment of sales agencies. There is reported to be a strong sentiment in both the House and Senate for such an amendment of the act, and in some instances for complete repeal.

Negotiations by a Joint Wage Scale Committee of miners and operators are set for March 14 in New York City. The situation of the industry after a bad business year indicates that there will be a strong desire on the part of the operators for a reduction in the wage scale. What the demands of the mine workers may be remains unknown at present. It is quite possible that the uncertainty in the picture supplemented by consumer expression may have a potent effect on the legislative treatment by Congress of the proposed amendments to the Bituminous Coal Act in the present session.

South side of the "Triangle," Washington, D. C. —*Horydczak.*



L. E. YOUNG
Attendance

L. F. CROUSE
Entertainment

C. J. SANDOE
Welcoming

Chairmen of Committees on Arrangements

P. C. THOMAS
General Chairman

W. W. RODGERS
Publicity

C. W. GIBBS
Floor

W. W. DARTNELL
Miners' Exhibits

W. E. GOODMAN

W. D. TURNBULL

THOS. McNALLY

W. C. RICHARDS

JAMES HYSLOP

K. R. BIXBY

PROGRESS in PLANNING *Coal Convention*

INTEREST in the forthcoming Coal Convention and Exposition of the American Mining Congress to be held in Cincinnati April 24-28, has reached a new peak among coal operators throughout the United States. Reports from the field attest the unusual amount of advance attention being displayed, and committee members planning the show, under the direction of W. J. Jenkins, National Chairman of the Program Committee, and P. C. Thomas, General Chairman of the Committee on Arrangements, are enthusiastic over the work accomplished to date. In short, all indications point toward another highly successful meeting at Music Hall in the Queen City next month.

Vital Subjects on Program

The accompanying preliminary program of vitally important subjects to be presented by leading operators during the four days is convincing proof of the fine work done by the Program Committee. Selection of speakers to present the various subjects has been virtually completed. Following the successful introduction of classified sessions at the 1938 convention, five of the sessions will again be devoted to specific phases of modern coal mining, as follows: Monday afternoon—Surface Preparation; Tuesday afternoon—Conveyor Mining; Wednesday afternoon—Mechanical Loading; Thursday morning—National Economic Problems; and Thursday afternoon—Safety and Supervision.

Only three main papers will be presented at each session, thus providing additional time for floor discussion, and special arrangements are being made to encourage a free flow of comment following each address. The exposition of mine machinery and equipment will again be open on Friday morning, with no convention sessions arranged, in order to permit delegates to inspect the fine displays without interruption.

Selection of session chairmen and discussion leaders for each paper is going forward, and final details of the program will be announced in the April number of the Journal.

General Arrangements

The various arrangements committees for the meeting, directed by the men pictured above, have gone a long way during the past month in making plans for: stimulating attendance, a bang-up entertainment program, suitable methods of welcoming the delegates on arrival, the smooth functioning of events on the floor of the convention, promoting interest in the miners' exhibit at the exposition (a new feature in which employes of coal companies will show devices or "operating kinks" which they have designed for some local need), and building publicity that will aid materially in promoting a record turnout. Chairmen and vice chairmen of the several committees are: *Attendance* — L. E. Young, vice president, Pittsburgh Coal Company, and William E. Goodman, vice president, Goodman Manufacturing Company; *Entertainment*—L. F.

Preliminary Program

MONDAY, APRIL 24

MORNING SESSION

Opening of Convention:
JULIAN D. CONOVER, Secretary, American Mining Congress

INTRODUCING:
HOWARD I. YOUNG, Pres., American Mining Congress
WILLIAM J. JENKINS, Pres., Consolidated Coal Co.
National Chairman, Program Committee
R. L. IRELAND, JR., Pres., Hanna Coal Co.
Chairman, Coal Division
ROY L. COX, Vice Pres., The Jeffrey Manufacturing Co.
Chairman, Manufacturers Division

ROOF PROBLEMS AND TIMBER RECOVERY
GEORGE A. BROWN, Mine Supt., Union Pacific Coal Co.

MACHINE MAINTENANCE—PRACTICES, PROCEDURE AND RECORDS
ERNEST PRUDENT, Elec. Engr., Bell & Zoller Coal & Mng. Co.

AFTERNOON SESSION

Surface Preparation

COAL PREPARATION
P. D. EVERLY, Supt. of Prep., Island Creek Coal Co.

STUDY OF RESULTS OBTAINED WHEN CLEANING FINE COAL BY AIR METHODS
D. H. DAVIS, Chief Chemist } Pittsburgh Coal Co.
V. D. HANSON, Asst. Prepr. Engr. }

DEWATERING TO PREVENT FREEZING
OTIS BLEDSOE, Chief Engineer, Binkley Coal Co.

TUESDAY, APRIL 25

MORNING SESSION

GUNITING TO PREVENT SLATE FALLS
C. W. JEFFERS, Mine Supt., United States Coal Co.

A WORKER'S IDEA OF WHAT A MINE FOREMAN SHOULD BE
JAMES DUFFY, Motorman, Buckskin Coal Co.

NEW DEVELOPMENTS IN COAL STRIPPING
C. M. GUTHRIE, Supt., Seneca Coal Co.

AFTERNOON SESSION

Conveyor Mining

ENGINEERING STUDIES AND CONVEYOR COST ANALYSES
T. F. MCCARTHY, Gen. Supt., Clearfield Bituminous Coal Corp., and
C. P. BRINTON, Mng. Engr., Barnes & Tucker Co.

SYMPOSIUM ON CONVEYOR LOADING
(a) Mechanical Loading—HAROLD MCDERMOTT, Vice Pres., New Castle Coal Co.
(b) Hand Loading—A. H. WHITT, Gen. Supt., West Virginia Coal & Coke Corp.
(c) Self-Loading Conveyors—T. F. CHRISTIAN, Gen. Supt., West Kentucky Coal Co.

WEDNESDAY, APRIL 26

MORNING SESSION

PAPER: Subject and author to be arranged

CULM FLUSHING AND BACKFILLING
HENRY A. DIERKS, Pierce Management, Scranton, Pa.

ORGANIZING THE SUPERVISION OF MECHANIZED MINING
FRANK E. CHRISTOPHER, Pres., Christopher Mining Co.

AFTERNOON SESSION

Mechanical Loading

PRODUCTION OF DOMESTIC SIZES WITH MECHANICAL LOADING
Speaker to be arranged

SERVICE HAULAGE
(a) Shuttle Haulage with Rubber-Tired Cars—W. A. VINSON, Gen. Supt., Hart Coal Corp.
(b) Dual Haulage with Service Cars—JOHN H. EVANS, Mine Supt., Wasson Coal Co.

CHOICE OF MINING SYSTEMS FOR TRACK-MOUNTED EQUIPMENT
S. M. CASSIDY, Mgr., Weirton Coal Co.

THURSDAY, APRIL 27

MORNING SESSION

National Economic Problems

BENEFITS OF MECHANIZATION TO THE COAL INDUSTRY
L. E. YOUNG, Vice Pres., Pittsburgh Coal Co.

MERITS AND DEMERITS OF FEDERAL REGULATION OF THE COAL INDUSTRY
GEORGE B. HARRINGTON, Pres., Chicago, Wilmington & Franklin Coal Co.

AFTERNOON SESSION

Safety and Supervision

SAFETY RULES, STANDARDS AND INSPECTION
J. J. SELLERS, Vice Pres., Virginia Coal, Iron & Railroad Co.

SECURING AND MAINTAINING EMPLOYEE COOPERATION IN SAFETY WORK
C. J. FLIPPEN, Safety Dir., Fuel Dept., N. & W. Railway

STANDARIZING STATE EXAMINATIONS FOR MINE OFFICIALS
JAMES C. GRAY, Mine Supt., Tennessee Coal, Iron and Railroad Co.

FRIDAY MORNING, APRIL 28—Exhibitors' Day

No convention sessions—to permit uninterrupted inspection of exhibits.

Arranging the above program at the meeting of the National Program Committee in Cincinnati, January 28. Seated, left to right: R. E. Kirk, B. H. Schull, W. J. Jenkins (chairman), J. T. Sydnor, J. M. Johnston. Standing, left to right: G. B. Southward, F. A. Jordan, R. J. Lund, C. Y. Thomas, J. B. Morrow, H. L. Richardson, R. L. Wilhelm, J. D. Conover, P. D. McMurrer, B. G. Shotton

Crouse, superintendent, Monroe Coal Mining Company, and W. D. Turnbull, Westinghouse Electric and Manufacturing Company; *Welcoming*—C. J. Sandoe, vice president, Perry Coal Company, and Thomas McNally, president, McNally-Pittsburg Manufacturing Corporation; *Floor*—C. W. Gibbs, general manager, Harwick Coal and Coke Company, and James Hyslop, manager of operations, Walter Bledsoe and Company; *Miners' Exhibit*—W. W. Dartnell, mining engineer, Claremont, N. H., and K. R. Bixby, general manager, Midland Electric Coal Corporation: *Publicity*—W. W. Rodgers, Westinghouse Electric and Manufacturing Company, and Walter C. Richards, A. Leschen and Sons Rope Company.

Entertainment

Increasing interest in the entertainment functions for each evening has been manifest by greater attendance in recent years, and the Entertainment Committee is arranging a series of shows this year that should smash all previous records. There will be four nights of solid fun—offering an unparalleled opportunity to talk over old times with "Tom," "Dick" and "Bill" under pleasant surroundings at a minimum cost.

With Chairman Dick Crouse and Vice Chairman Bill Turnbull in attendance, a meeting of the Entertainment Committee was held in Cincinnati February 8, at which general plans were developed.

Special features are now being arranged for each of the four nights. One of these—a departure from past programs that is bound to score a hit with all delegates—is the Bavarian Stag Night to be held Tuesday evening. Good fellowship and fun will flow freely in this evening for gentlemen only, and guests will have a chance to test "Old Lady Luck," with liberal prizes to be awarded those finishing with the largest "winnings." Refreshments will include beer and cold cuts "on the house," and novelty acts appropriate to the Bavarian settings will complete the bill.

—*First National*

Special entertainment is also being developed for the large number of ladies expected to be present, including luncheons, bridge parties and sightseeing trips during the four days, and a ladies' party for Tuesday night when the men are cavorting by themselves.

Further details on entertainment will be announced in the near future.

The Exposition

The vitally important role in efficient present-day mine operation played by manufacturers will again be strikingly displayed at the huge exposition—a feature of the Cincinnati meeting that draws throngs of operators each year to see, study and buy latest developments in all types of mining equipment and supplies. The importance attached by alert operators to this huge "mining showcase" is typified by comments of many prominent mine officials who devote a major portion of the entire five-day period to careful inspection and study of all the exhibits and to talking over tough problems with expert sales engineers in attendance. Their time and expense are repaid many times over by valuable ideas gleaned thereby.

Sponsored by the Manufacturers Division of the American Mining Congress, of which Roy Cox, vice president, Jeffrey Manufacturing Company, is chairman, the exposition is again attracting the participation of leading makers of mining equipment of all types, virtually all of the available space in the three huge exhibit halls of Cincinnati's Music Hall having been contracted for at this early date.

Advance publicity releases indicate that many brand new machines and equipment never exhibited before will be on display to command particular attention from the delegates. That the attendance is a live representation of the industry is shown by the fact that 56 percent of those attending in 1938 had not been present the previous year. The very nature of coal mine operations makes it impossible for all interested parties to visit the coal show each year; this turnover thus guarantees a most receptive audience for every item on the exposition floor.

As usual, a maximum amount of the equipment will be in operation to demonstrate its adaptability to every need of the modern coal mine or preparation plant.

Among those who will show their latest developments at this annual world fair of coal mining are:

Acme Compressor Co.
Advertising Displays, Inc.
Ahlberg Bearing Corp.
Air Reduction Sales Co.
Louis Allis Co., The
Allis-Chalmers Mfg. Co.
American Blower Corp.
American Brattice Cloth Corp.
American Car and Foundry Co.
American Chain & Cable Co., Inc.
American Cyanamid & Chemical Corp.
American Steel & Wire Co.
Anaconda Wire & Cable Co.

Atlas Powder Co.
Barber-Greene Co.
Bemis Bro. Bag Co.
Bethlehem Steel Co., Inc.
Bituminous Coal Research, Inc.
Bowdil Co., The
Broderick & Bascom Rope Co.
Brown-Fayro Co., The
Bucyrus-Erie Co.
Cardox Corporation.
Carnegie-Illinois Steel Corp.
Central Electric Repair Co.
Chicago Pneumatic Tool Co.
Cincinnati Mine Machinery Co.
Cities Service Oil Co.
Coal Mine Equipment Sales Co.
Coffing Hoist Co.
Columbia Steel Co.
Crucible Electric Steel Co., The
Cyclone Fence Co.
Deister Concentrator Co., The
Deister Machine Co.
Deming Co., The
Differential Steel Car Co.
Douglas-Guardian Warehouse Corp.
Duff-Norton Mfg. Co., The
Du Pont de Nemours & Co., Inc., E. I.
Dustlix Corp.
Edison, Inc., Thomas A.
Electric Controller & Mfg. Co., The
Electric Railway Equipment Co.
Electric Railway Improvement Co.
Electric Storage Battery Co.
Enterprise Wheel & Car Corp.
Fafnir Bearing Co., The
Fairmont Machinery Co.
Fletcher & Co., J. H.
Flood City Brass & Electric Co.
General Electric Co.
Gibraltar Equipment & Mfg. Co.
Goodman Mfg. Co.
Gould Storage Battery Co.
Gruendler Crusher & Pulverizer Co.
Gulf Oil Corp.
Haynes Stellite Co.
Hendrick Mfg. Co.
Hercules Powder Co.
Hobart Brothers Co., The
Illinois State Exhibit
Imperial Bronze Mfg. Co.
Interstate Equipment Corp.
I-T-E Circuit Breaker Co.
Jeffrey Mfg. Co., The
Johnson-March Corp., The
Joy Mfg. Co.
Koppers Company
Koppers Rheolaveur Co.
La-Del Conveyor & Mfg. Co.
Leschen & Sons Rope Co., A.
Linde Air Products Co., The
Link-Belt Co.
McGraw-Hill Publishing Co.
McLanahan & Stone Corp.
McNally-Pittsburg Mfg. Corp., The
Macwhyte Company
Mancha Storage Battery Locomotive Co.
Marion Steam Shovel Co., The
Mechanization, Inc.
Metal & Thermit Corp.
Mine Safety Appliances Co.
Morrow Manufacturing Co., The
Mott Core Drilling Co.
Myers-Whaley Co.
Nachod & United States Signal Co.
National Carbide Corp.
Nail City Bronze Co.
National Carbon Co., Inc.
National Electric Coil Co.
National Malleable & Steel Castings Co.
National Tube Co.
Nordberg Mfg. Co.
Norma-Hoffman Bearings Corp.
Ohio Brass Co.
Osmose Wood Preserving Co. of America, Inc.
Owens-Corning Fiberglas Corp.
Penn Machine Co.
Pennsylvania Electric Coil Corp.
Philco Radio & Television Corp.
Portable Lamp & Equipment Co.
Post-Glover Electric Co., The
Productive Equipment Corp.
Prox Co., Inc., Frank
Pure Oil Co., The
Roberts & Schaefer Co.
Robins Conveying Belt Co.
Roebling's Sons Co., John A.
Rome Cable Corp.
Safety First Supply Co.
St. Louis Power Shovel Co.
Sanford-Day Iron Works, Inc.
Scully Steel Products Co.
Shell Petroleum Corp.
Simplicity Engineering Co.
S K F Industries, Inc.
Socony-Vacuum Oil Co., Inc.
Standard Oil Co. (Indiana)
Stephens-Adamson Mfg. Co.
Sterling Pump Corp.
Streeter-Amet Co.
Sullivan Machinery Co.
Sun Oil Co.
Talcott, Inc., W. O. & M. W.
Tallman Mfg. Co.
Tamping Bag Co.
Templeton, Kenly & Co.
Tennessee Coal, Iron & Railroad Co.
Tide Water Associated Oil Co.
Timken Roller Bearing Co., The
Tool Steel Gear and Pinion Co., The
Tyler Co., The W. S.
Union Carbide & Carbon Corp.
Union Wire Rope Corp.
United Engineers & Constructors, Inc.
United States Rubber Co.
United States Steel Corp.
Watt Car and Wheel Co., The
Webster Mfg. Co., The
Weir Kilby Corp.
Western Cartridge Co.
Westinghouse Elec. & Mfg. Co.
West Virginia Rail Co., The
White & Co., Inc., H. Kirk
Wilson Welder and Metals Co.
Wood Preserving Corp.

SHOW YOUR PET *Gadgets!*

■ A new feature at this year's Exposition will be a Miners' Exhibit where coal men may display, free of charge, practicable "operating kinks" they have designed for local use. Prizes will be awarded.

■ Look over the rules you have already received and plan to send in your entry at once to—

Miners' Exhibit Committee

AMERICAN MINING CONGRESS

309 Munsey Building Washington, D. C.

NEWS and VIEWS

Move to Amend Guffey Act Gains Headway

A determined effort to amend the Guffey-Vinson Coal Act has crystallized in Washington during the past month. Backed by a majority of the bituminous coal industry, the Committee to Amend the Coal Act opened temporary headquarters in the Washington Hotel early in February and a little later set up permanent offices in the Munsey Building.

Two letters have already been sent to members of the industry, and the response has been more than gratifying, it was said. Briefly, the committee has put itself on record as believing that the Coal Act, under which the National Bituminous Coal Commission functions, is unworkable. It is to this that they attribute the nearly two years of futile attempts to fix minimum prices for coal, rather than to any failure or lack of effort on the part of the Commission.

The committee's second letter to the industry quotes from a recent issue of a trade paper catering exclusively to coal, to the effect that "The National Bituminous Coal Commission expected that if prices were established in accordance with the unofficial expectation of the Commission, the ultimate date for effective prices would be August." Since that time, the committee points out, the Commission has extended the time for coordination of prices 30 days which would necessitate a revision of this estimate into September.

"Demoralized prices," the committee's letter continues, "caused by the provisions of this Act are causing losses variously estimated at from $7,000,000 to $10,000,000 a month. If the minimum prices contemplated by this Act are not to become effective for another eight or ten months, then this industry faces an accumulating loss that may easily run to $50,000,000 or $75,000,000 more to continue this experiment to the time when prices would be established. If established at this huge cost they provide no profit, but only place the industry on a break-even basis. Even then minimum prices may be delayed or upset by adverse legal action, and all this loss will have been suffered for nothing."

The committee has queried the industry in the following manner:

Do you wish:

1. To stop the one cent a ton tax and the District Board Assessments and save our money?

2. To cut out the 30-day clause so that we can sell coal on regular contracts and get our output off the "spot" market?

3. To cut out the present Code, its useless, costly reports and unworkable price-fixing provisions?

4. To broaden and strengthen the voluntary sales agency provisions of the Act, so that, under supervision of some one of the regular government departments, we can go to work at once to help ourselves in a practical way?

The replies to all four of these questions were overwhelmingly in the affirmative, according to the committee, and answers to a request for any further suggestions indicated that the industry has been giving very serious thought to the whole question.

A subcommittee has been appointed to make a study of the question of remedial legislation which will probably be introduced in Congress in the near future.

John A. Howe is chairman of the Temporary Steering Committee, whose membership includes O. L. Alexander, James Walter Carter, William H. Cooke, W. J. Cunningham, W. F. Davis, Charles F. DeBardeleben, C. C. Dickinson, E. M. Douthat, J. D. Francis, Brent Hart, Calvin Holmes, R. L. Ireland, Jr., R. E. Jamison, R. H. Knode, George H. Love, J. D. A. Morrow, Justin Potter, C. F. Richardson, J. Noble Snider, R. E. Snoberger, H. R. Hawthorne and J. P. Williams, Jr.

International Nickel To Develop Open Pit Operation

Preparations have been completed for the development in 1939 of extensive open-pit mining operations at the famous Frood mine, near Sudbury, Ontario, which for years has been the world's greatest single source of nickel and the platinum metals, as well as an important producer of copper, silver, gold, selenium and tellurium.

Prior to this new development, all ore was mined at levels starting at 2,400 ft. below the surface and extending at 200-ft. intervals to 3,400 ft. These deeper deposits were first worked because of their richer metal content, and the plan to mine simultaneously from the surface through open-pit operations is due to the new policy of combining surface mining with mining at depth in order to assure an average grade of ore over the future life of this mine, according to Robert C. Stanley, chairman and president of the International Nickel Company of Canada, Ltd.

Said to be one of the few shovel operations of its kind in the world, the blasted ore will be picked up by electric shovels weighing 165 tons with 4½-cu.-yd. dippers and dumped into a fleet of trucks of 35 tons capacity for hauling to a special open-pit crushing plant.

An area 4,000 ft. long by 400 ft. wide has been marked for open-pit development. The first 18 months will be devoted to levelling off the ore outcrop to the general surface elevation; thereafter the sides of the pit will be maintained at an angle of 45 degrees to assure safety and to provide roadways for haulage to the crushing and sorting plant.

Consumers Told of Anthracite Research

Efforts of the Pennsylvania anthracite industry and allied interests to provide the consumer more heat, greater convenience, and lower cost than ever before for every dollar spent for hard coal, were described by representatives of The Anthracite Institute who recently spoke in New York City before a large meeting of the League of Women Voters.

"Over $400,000,000 has been invested by the anthracite producing industry to insure standardized preparation of anthracite which we are proud to place in consumers' hands," said Mr. Norman F. Patton, director of the Bureau of Information. He traced improvement in quality over the past several years and stressed the high degree of uniformity which purchasers from legitimate collieries are now receiving. On the other hand, Mr. Patton pointed out the inferior product and short weight which invariably accompanies the operations of the bootleggers, several thousand of whom are daily engaged in stealing coal, transporting it and offering it for sale direct to consumers even as far away as Toronto, in competition with legitimately prepared anthracite produced under uniform wage scales and in conformity with the various compensation, social security, and other laws. The anthracite producers have made several attempts and are still continuing efforts to reduce retail prices to the consumer through reduced operating costs, freight rates, and other economies with the realization that the salvation of the industry lies in lower prices to the consumer.

Going back 15 years, Mr. H. L. Littell, combustion engineer for The Anthracite Institute, traced the efforts of the anthracite producing companies in behalf of the consumer.

Not long after this advisory service was made available, the anthracite industry established equipment research and development activities.

COAL PRICE FIXING UPHELD by COURT

The United States Court of Appeals for the District of Columbia on February 15 upheld the National Bituminous Coal Commission's price fixing powers and denied the City of Atlanta an injunction which would have restrained the Commission from promulgating price fixing orders for the sale of bituminous coal.

The City of Atlanta, in presenting its case seeking the injunction, demanded that the Court declare the National Bituminous Coal Commission Act unconstitutional, and contended that the Commission was without authority to promulgate minimum price orders, and that any price orders issued by the Commission were not applicable to the City of Atlanta.

In the decision, read by Justin Miller, Associate Justice, United States Court of Appeals for the District of Columbia, and concurred in by Alfred A. Wheat and Jesse C. Adkins, Chief Justice and Associate Justice, respectively, of the same court, the Court said: "The City of Atlanta contends that the commerce clause does not confer upon the Federal Government power to fix prices of coal. It is conceded that the coal which the City of Atlanta uses must be received by it in interstate commerce as it is all mined in states other than Georgia. Consequently, the challenge to the exercise of Federal power must be considered in the light of this concession, and of the well-established law that although the production of coal in and of itself may not constitute interstate commerce, the sale and shipment of that coal, or the contracting to sell and ship, to customers in another state, does.

"The vital question remaining, then, is whether the regulatory authority of Congress over interstate commerce permits it to establish prices of coal sold in that commerce. That it has power so to control interstate commerce as to affect prices indirectly there can be no doubt because the fixing of rates for transportation, and the regulation of conditions of labor, must necessarily affect prices in many cases."

In the decision, the Court pointed out that it has been held that the states have power to fix prices and the regulation of their internal commerce under the police power. This being so, it said:

"There is no reason to deny to Congress a commensurate power with respect to regulation of interstate commerce.

"Further, it seems to be implicit in the language of several decisions of the Supreme Court, that Congress, in the regulation of interstate commerce, has power to fix prices. To hold that it has not such power when its exercise may be, in many cases, the only method of protecting such commerce would create a sphere in which commerce would be free of all regulation. This cannot be the case.

"In view of its broad power to regulate interstate commerce, it was for Congress to decide, from its general information and from such special evidence as was brought before it, the nature of the evils actually present or threatening, and to take such steps by legislation within its power as it deemed proper to remedy them. This it did in the enactment of the National Bituminous Coal Act."

The City of Atlanta had also contended that the Act is unconstitutional because it violates the due process clause of the Fifth Amendment. The Court cited a New York decision which had ruled: "If the laws passed are seen to have a reasonable relation to a proper legislative purpose, and are neither arbitrary nor discriminatory, the requirements of due process are satisfied, and judicial determination to that effect renders a court *functus officio*. . . . And it is equally clear that if the legislative policy be to curb unrestrained and harmful competition by measures which are not arbitrary or discriminatory it does not lie with the courts to determine that the rule is unwise."

The Court upheld Congress in the enactment of this Act and denied the allegation that the Act in its price-fixing provisions made an excessive delegation of legislative power. The City of Atlanta's contention that the Act constituted an infringement on its sovereign powers and a usurpation of the power reserved to the state by the Tenth Amendment was condemned by the Court, and the appellate body pointed out that since the fixing of coal prices, as provided in the Act, comes properly within the scope of the commerce clause, conflicting powers of the state must give way so far as may be necessary.

Immediately after the decision was rendered, the Coal Commission took steps to push forward with coordination hearings in order to establish the final minimum price schedules. These hearings are progressing slowly, and no announcement has been made by the Commission as to when the final minimum prices may be expected.

Sullivan Machinery Elects New President

Announcement was recently made by the Sullivan Machinery Company of the election of Frederick W. Copeland as president. Mr. Copeland has resigned the presidency of the H. Channon Company, Chicago, to take over his new duties. He returns to Sullivan after a long period of service with the company, having joined the organization in 1913. In the 21 years that followed, he worked successively as apprentice in each plant, serviceman in the mines, salesman, export manager, vice president and controller. He has been a director of the company since 1923. In 1934 he left to become president of the Channon Company.

The election of Mr. Copeland to the presidency of the Sullivan Machinery Company has additional historical significance to the employes and stockholders, since his father, the late Frederick K. Copeland, served as president of the company from 1892 to 1928.

The following new directors were also elected: H. T. Walsh, J. W. Haddock, W. R. Jarvis and L. T. Noel.

Lake Superior Safety Men Meet

With some 55 safety men from all parts of the Lake Superior region attending, a successful meeting of the Lake Superior mining section of the National Safety Council was held at Iron River, Mich., on the Menominee iron range January 18. The meeting was the first of the bi-monthly gatherings to be held throughout 1939.

C. M. Fellman, safety engineer of the Montreal Mining Company, Montreal, Wis., and chairman of the safety section, presided at the meeting. Dr. Leiberthal, of Ironwood, Mich., reviewed eye conditions throughout the district, emphasizing the large reduction in eye accidents effected through the use of protective goggles.

The quarterly meeting is scheduled for April 19 at the Mather Inn, Ishpeming, Mich., on the Marquette iron range.

1000-Ton Mill Planned At Pioche

The Combined Metals Reduction Company of Pioche, Nev., a subsidiary of National Lead, is preparing to erect a 1,000-ton mill just as soon as weather permits, according to a recent announcement.

Selective flotation will be utilized in the new plant which is expected to treat a large amount of custom ore in addition to the company's own output of about 250 tons daily. It is reported that the most modern construction features will be incorporated in the new plant, including artificial lighting in the absence of windows, and air conditioning. It will be situated close to the Castleton shaft.

Interest In Outlying Tri-State Mine

Considerable interest and attention of mining men and geologists is being focussed on the Shinn mine of the Eagle-Picher Mining and Smelting Company at Stark City, Mo.—the first outlying ore body to be developed in the Tri-State District in several years. It is reported that distinctly different characteristics of the ore body account for much of this unusual interest.

The company has done considerable drilling in the immediate vicinity of the mine, where a zinc-ore body of good grade has been blocked out. However, it is reported that extension of the ore body to the magnitude of a new mining field is now regarded as rather improbable.

The company has recently completed a new derrick and 225-ton hopper at the mine, which now employs a crew of approximately 25 miners. Daily production is running about 375 tons.

NEW DIRECTORS OF THE AMERICAN MINING CONGRESS

L. S. CATES

H. L. PIERCE

New members of the Board of Directors of the American Mining Congress, elected at the annual business meeting in Washington, D. C., January 27, are Louis S. Cates, president, Phelps Dodge Corporation; H. L. Pierce, M. A. Hanna Company; and N. W. Rice, president, U. S. Smelting, Refining and Mining Company. (Photograph of Mr. Rice not available.)

These men bring to the Board a wealth of experience in meeting difficult problems in the conduct of mining enterprise. The companies they represent have been for years among the most progressive mining organizations in the country.

Addition of the valuable counsel of these prominent mining men in charting the work of the American Mining Congress will enable the organization to serve even more effectively the best interests of the entire mining industry.

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Annual Meet of Colorado Mining Men

Mining men from all parts of Colorado and many other western states gathered in Denver January 26 and 27 for the 26th annual meeting of the Colorado Mining Association and the Colorado Chapter of the American Mining Congress.

Problems facing the western mining industry were aired during the two-day session by such prominent speakers as: Dr. Charles H. Behre, Jr., of Northwestern University, who spoke on "Lead and Zinc Deposits of Europe and America Compared"; Hans Lundberg, of Toronto, Ontario, whose subject was "Latest Developments in Geophysics as Applied to Mining"; Ernest V. Gent, secretary of the American Zinc Institute, who described the damaging effects to the American zinc industry of the recent Canadian reciprocal trade agreement; Dr. H. B. Mellor, of the Air Hygiene Foundation, who stressed the problem of occupational disease insurance; Baldwin B. Bane, chief of the registration division of the SEC, who described registration requirements of that organization; Max Bowen of the Golden Cycle Corporation of Colorado Springs, who explained the new rates on ore shipment recently made effective by his company; Earl Harding, executive assistant to the president of Remington-Rand, Inc., whose subject was "Raw Material Prices and Business Recovery"; and A. H. Zeilinger, Colorado Fuel and Iron Co., Pueblo, who spoke on the all-important subject of safety, and reported on advances made under the experienced rating program of workmen's compensation.

The meeting was opened by Jesse F. Macdonald, of Denver, former governor and president of the association; he introduced Mayor Benjamin F. Stapleton of Denver, who extended greetings of the city. Robert S. Palmer, secretary of the organization, reported to delegates on the work done by the association during the past year and reviewed problems that are facing Colorado miners.

Entertainment features included the silver banquet on Thursday night, followed by the world-famous Sowbelly Dinner on Friday, which climaxed the activities and brought the meeting to a close. George W. Malone, former state engineer of the State of Nevada and now the head of the industrial west, was the principal speaker at the silver banquet, and the principal feature of the Sowbelly Dinner was a historical pageant with a cast of 45 depicting Colorado mining history.

In outlining a program necessary for the progress of the mining industry, the organization declared itself in favor of: (1) abandonment of manipulated currency and return to a stable monetary system consisting of coined gold and silver with certificates freely exchangeable for either or both: (2) equal taxation of the income from securities now tax exempt; (3) equalization of tax burdens on industries by basing income taxes on earnings over a period of years; (4) repeal of the capital stock tax or its amendment to allow annual declaration of value; (5) withdrawal of unnecessary and vexatious requirements of government agencies and a more sympathetic and friendly attitude of the SEC and other governmental bodies towards the financing of meritorious new enterprises; (6) having an independent survey of administration of the Workmen's Compensation Fund of Colorado, as relating to mining risks and present high premium rate, made by a competent firm; (7) strong opposition to the enactment of S. 4138 calling for forfeiture of mining claims within a grazing district unless further annual assessment work is performed; (8) strong disapproval of the reductions in the tariff on zinc made in the Canadian Reciprocal Trade Agreement; (9) emphatic disapproval of any proposal to transfer the functions of the Metal Mining Board to any body of men outside the industry or to regard the tax with which it is financed as a tax imposed for general state purposes; (10) pressing for such exemptions of the Fair Labor Standards Act as will permit the continuance of high earnings of laborers and the established helpful routine of life, necessitated by special conditions in the mining industry of Colorado which make it impossible to adjust itself to requirements of this Act; (11) definite fixation of the silver price for a reasonable period of years in advance at a reestablished price of at least $1.00 per ounce to permit logical expansion of western mines and solve the major part of the west's unemployment problem, and that any solutions of important problems dealing with United States silver stocks should not overlook the imperative need of stabilizing the price of domestically mined silver, and (12) expression of the association's real appreciation of the invaluable and continuous efforts of Senator Pittman of Nevada and other western Congressmen towards the establishment of a fair price for domestically mined silver.

Included in other resolutions was one advocating definite action before the Interstate Commerce Commission opposing further abandonment of railroads in Colorado as contrary to the best interests of the State; and calling for a complete study of the workmen's compensation problem in Colorado.

Kanawha Coal Men Oppose Dam Construction

Federal authority to construct the Bluestone flood control and hydroelectric power dam on New River near Hinton, W. Va., was challenged in February when the Kanawha Coal Operators Association made public a resolution condemning its construction.

The resolution asserted that the Federal Government is without power to undertake construction of the dam without consent of the state legislature, and both the governor and the legislature were called upon to withhold consent and "to resist any move by the Federal Government to proceed with the project. . . ."

Completion of the project, which the operators described as a hydroelectric power project masquerading as flood control, would result in the annual displacement of 200,000 tons of West Virginia bituminous coal and the annual loss of 200,000 man-days of employment in state coal mines and on railroads hauling the product.

Montana Miners Adopt Resolutions

Resolutions adopted by the Mining Association of Montana at its semi-annual meeting held recently in Helena, strongly advocated:

(1) Support of the silver purchase program of Senator Key Pittman embodied in his recent Senate bill;

(2) Enabling legislation from the Montana Legislature to permit deduction of Social Security and other payroll taxes from the net proceeds of mine taxes;

(3) No further reduction in present tariff protection of ores, concentrates or finished products of copper, lead and zinc in any future reciprocal trade agreements;

(4) Appropriation of additional funds to the National Forest Service for building roads in the national forests for the mutual benefits both of the Forest Service and the mining districts located therein;

(5) Granting a preference to the purchase of domestic ores and minerals in so far as possible in carrying out the provisions of any of the several bills that have been introduced for the purchase of strategic material and minerals, if and when passed—such preference to minerals of domestic origin to be given to such extent as the same may be available in the United States with reasonable time to be allowed for production and delivery.

Chairman of the Resolutions Committee was Stanley R. Moore, of Wilborn, Mont.; Carl J. Trauerman is secretary of the organization.

Lilybrook Control Transfer

Dr. J. H. McCulloch recently announced he had purchased J. A. Hunt's interests in the Lilybrook Coal Company, one of the largest operations in the Beckley, W. Va., district, and henceforth would serve as president and general manager. Terms involved in the Hunt transactions were not disclosed by Dr. McCulloch, who is also a vice president of the Raleigh Smokeless Fuel Company, which holds the controlling interest in the Lilybrook concern. It is reported that no change in personnel was contemplated.

Fire Destroys Sharon Tipple

A fire of undetermined origin completely destroyed the large tipple of the Sharon mine of the Wyatt Coal Company at Sharon, W. Va., on February 18, thus forcing a shutdown of the mine which normally employs some 250 men. Total damage was estimated at $40,000.

Plans to rebuild the 20-year-old tipple, remodeled last year, were announced at once by D. W. Martin, superintendent of the three Cabin Creek mines operated by the Wyatt Company, but construction will require between three and four months.

The company, headed by John Laing, as president, also operates mines at Eskdale and Laing on Cabin Creek, and Mr. Martin said that an effort will be made, if business conditions permit, to place the 250 miners to work at these other operations.

Survey On Mica

The U. S. Tariff Commission issued late in November a report of nearly 300 pages concerning the mica industry of the world. Comprehensive data are given with respect to production, uses and international trade in mica, including the effect of tariffs on such trade and the dependence of industrial countries on this essential but little understood mineral. The report also refers to the recent invention of a new product made from colloidal clays like bentonite, reported to be similar to or identical with mica in its most important electrical properties.

A limited number of copies of the report (No. 130, Second Series) are available for distribution by the Tariff Commission, or the report may be purchased from the Superintendent of Documents, Washington, D. C., for 25 cents per copy.

Annual Dinner of Coal Firm

Executives and supervisory employes of the Hatfield-Campbell Creek Coal Company met February 16 at the Kanawha Hotel in Charleston, W. Va., for their annual dinner and fellowship hour. About 60 persons from the mines at Point Lick, Putney and Plymouth and from the company's office at Cincinnati were present.

N. P. Rhinehart, chief of the state department of mines, was the principal speaker, and others on the program included James T. Hatfield, Jr., vice president; J. M. Stirnkarb, general sales manager; and George Swartz, association sales manager, all of the Cincinnati office of the company.

William W. Miller, vice president and general manager of the company, presided.

Mine Safety Organization Changes

Mine Safety Appliances Company recently announced the following changes in its organization.

A new office was created, that of chairman of the board of directors, to which Mr. George H. Deike was elected. J. T. Ryan was elected president and general manager; J. F. Beggy, vice president and secretary; George H. Deike, treasurer; and J. T. Ryan, Jr., was appointed assistant general manager.

The twenty-seventh annual meeting of the Chamber of Commerce of the United States will be held in Washington, D. C., May 1-4, 1939. The opening session will be held on Tuesday, May 2, with the National Council meeting on Monday, May 1.

R. L. IRELAND, JR., HEADS COAL DIVISION ADVISORY COUNCIL

R. L. IRELAND, JR.

The American Mining Congress is happy to announce the acceptance by R. L. Ireland, Jr., president of the Hanna Coal Company, of the chairmanship of its Coal Division.

Mr. Ireland brings to this important post a rich background of mining experience, coupled with sound, energetic and aggressive administrative ability. Starting as an engineer, he advanced through the operating and sales department to his present executive position, and during these years, as an advocate of improved methods, he has contributed greatly toward the development of modernized coal mining. His leadership of the Coal Division assures continued progress in the effective work it is accomplishing.

Mr. Ireland takes over the duties recently relinquished by Mr. E. J. Newbaker, vice president of the Berwind-White Coal Mining Company, under whose able direction the work of the Coal Division has advanced to the prominent and well recognized status it holds today.

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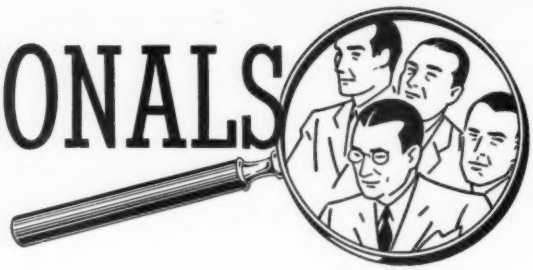
PERSONALS



ROBERT C. STANLEY, president of the International Nickel Company, has been nominated a director of the United States Steel Corporation to succeed WALTER S. GIFFORD, president of the American Telephone and Telegraph Company, it was announced recently by EDWARD R. STETTINIUS, JR., chairman of the board of United States Steel.

LOUIS S. CATES, president of the Phelps Dodge Corporation, was awarded the William Lawrence Saunders medal for outstanding achievement in mining at the annual dinner of the American Institute of Mining and Metallurgical Engineers on February 15. This is the highest honor that is bestowed in the mining engineering profession in the United States. Mr. Cates also was recently named Chevalier of the Legion of Honor by the French government.

ERNEST F. RUMPF was recently elected vice president of the Pittsburgh Coal Company to take over the duties relinquished by FRANCIS J. LEMOYNE, vice president of the company, who retired on December 31 at the retirement age of 70 years. Mr. Rumpf will be in charge of supervision of the office of treasurer, secretary, comptroller, manager of insurance, real estate and relief, and related matters.

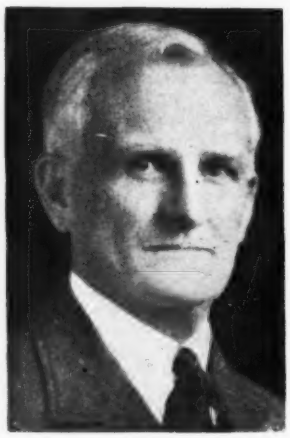
CHARLES E. LAWALL, acting president of West Virginia University, spoke early in February before a joint meeting of the McDowell County Service Clubs at Welch, W. Va. He stressed the value of mining research in West Virginia, pointing out the unlimited possibilities of coal in the future.

OTTO HERRES, well known Salt Lake City consulting engineer and former vice president and general manager of the United States Fuel Company operations, is now assistant to the general manager, E. H. Snyder, of Snyder Mines, Inc., and the Combined Metals Reduction Company.

HARRY N. MEADE has been appointed president of the Mullens Smokeless Coal Company, at Nuriva, W. Va.

MICHAEL GALLAGHER has been appointed assistant to the vice president of the Western Pocahontas Corporation, Cleveland, Ohio, with offices in the Terminal Tower. The Western Pocahontas Corporation is a wholly owned subsidiary of the Chesapeake and Ohio Railroads, with very extensive coal land holdings on that road.

CHARLES H. GLASGOW has resigned his post as general superintendent of the Veta Mines, Inc., at Telluride, Colo., effective January 1. He will make his home in Santa Barbara, Calif., for the time being.



DONALD B. GILLIES

DONALD B. GILLIES, vice president, Republic Steel Company, took over the presidency of the American Institute of Mining and Metallurgical Engineers at the annual dinner of the organization in New York on February 15. He succeeds D. C. JACKLING, president, Utah Copper Company, in this important position.

ROBERT T. BANKS, employed by the Sullivan Machinery Company for many years on both the east and west coasts, has been made manager of the Intermountain office with headquarters at Salt Lake City, Utah. He succeeds L. C. ROSE, who has been made manager of the Butte-Spokane section.

FRANK C. CAROTHERS has been appointed general manager of the Puritan Coal Corporation, Puritan Mines, W. Va. Mr. Carothers was formerly assistant to manager of the Pond Creek Pocahontas Company at Bartley, W. Va.

GEORGE F. BARNARD is now superintendent of the Long Branch No. 1 mine of the Koppers Coal Company at Long Branch, W. Va.

R. H. TINSLEY is now superintendent of the Dayton Coal Corporation's New Howard mine at Surosa, W. Va.

JOHN J. CURZON has been promoted to the position of general superintendent of the Chelan division of the Howe Sound Company, Holden, Wash. He succeeds GEORGE C. LIPSEY, who has returned to the Britannia Mining and Smelting Co., Ltd., at Britannia Beach, British Columbia.

Curzon joined the Howe Sound staff at Holden in the fall of 1937, after resigning as superintendent of the Eureka Mining and Milling Company at Republic, Wash.

H. H. AGEE has been named superintendent of the Mullens mine of the Mullens Smokeless Coal Company at Nuriva, W. Va.

W. J. HINES has been made superintendent of the Micco No. 3 mine of West Virginia Coal and Coke Corporation, at Micco, W. Va.

C. L. BIDDISON is now superintendent of the Lemoyne and Sandy McGregor mines of the Ward-Hoyt Mining Company at Bickmore, W. Va.

HENRY H. ELKINS has been apsafety director for the Keith Coal Mining Company, at Keith, W. Va.

WILLIAM P. CRAWFORD has been named mine superintendent of the mines division, Copper Queen Branch, Phelps Dodge Corporation, at Bisbee, Ariz., succeeding the late GEORGE B. LYMAN.

Following work on the engineering staff of the Hudson Bay Mining and Smelting Company and the Akron Mines Company of Colorado, Crawford moved to Bisbee 12 years ago where he entered the employ of the Calumet and Arizona Mining Company. When this company merged with the Copper Queen Branch of Phelps Dodge, Crawford continued on the engineering staff and was soon made engineer in charge of leases. He was later named efficiency engineer for the branch.

CHARLES WILL WRIGHT

CHARLES WILL WRIGHT, foreign minerals specialist of the United States Bureau of Mines and the State Department, is now in Washington for about a two-month stay. He recently returned from London, following some three years spent in studying mineral conditions in Europe, and will leave about April 1 for La Paz, Bolivia, where he will resume his special mineral studies in South America.

BOB COOPER has been appointed assistant superintendent for the United States Coal and Coke Company's Nos. 4 and 5 mines at Thorp, W. Va.

JAMES BENSON is now safety director of the Raleigh Wyoming Mining Company at Edwight and Glen Rogers, W. Va.

J. B. HASKELL has been appointed sales manager of the rail and track work division of the West Virginia Rail Company, Huntington, W. Va. For the past 15 years Mr. Haskell has been superintendent of the frog and switch department of the company, and has been closely identified with the development of track standards by the American Mining Congress, having served on the track standards committee for the past 12 years.

HARRY LOUD has been made superintendent of the Gordon mine of the Detroit Mining Company, at Gordon, W. Va.

FRANK MILLER, former instructor in the mining extension department of the Madison district, has been promoted to district inspector for the Koppers Coal Company, stationed at Madison, W. Va.

DOMINICK SORRENT has been appointed assistant superintendent at the No. 22 mine of the Island Creek Coal Company, at Holden, W. Va.

RENO H. SALES, chief geologist of the Anaconda Copper Mining Company, Butte, Mont., was presented with the Penrose medal by the Society of Economic Geologists at the annual dinner of the organization held in New York on February 14. This is the highest honor bestowed by that organization. Sales was president of the society in 1937.

GRAHAM GRANGER has been promoted by the Koppers Coal Company to be an assistant general manager of sales, a position similar to that held by H. J. SPEAR, according to an announcement made by WALTER ROTHENHOEFER, general manager of sales for the company. Mr. Granger is a combustion engineer and has been associated with the company for a number of years in Norfolk, Va., New York City and Pittsburgh. Headquarters of Mr. Spear and Mr. Granger will be in Pittsburgh.

G. J. STOLLINGS has been appointed manager for the Pond Creek Pocahontas Coal Company.

T. J. MCPARLAND has succeeded W. C. HOOD as general superintendent of the United States Coal and Coke Company at Gary, W. Va. Mr. Hood has been transferred as general superintendent to the H. C. Frick Coal and Coke Company.

DAVID PURSGLOVE is now superintendent of the No. 2 and No. 5 mines of the Pursglove Coal Company at Pursglove, W. Va.

O. D. FLATT has been appointed superintendent of the 1-3-4-5 mines of the Raleigh Wyoming Mining Company.

J. J. SNURE is now superintendent of the Milburn Nos. 1 and 2 mines of the Milburn By-Products Coal Company, Milburn, W. Va.

R. E. CAMPBELL is now advertising manager of the Sullivan Machinery Company, which has centralized all its publicity functions in a general advertising department at Michigan City, Ind. R. B. THOMAS is assistant advertising manager.

— *Obituaries* —

JAMES A. CASELTON, manager of the St. Louis branch and a director of the National Lead Company, died in St. Louis February 12 of complications arising from an emergency appendectomy he underwent February 3. His age was 54.

JAMES A. CASELTON

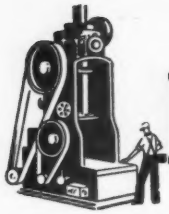
Mr. Caselton began his career with the St. Louis Smelting and Refining Company in 1906. He advanced rapidly, being appointed assistant secretary of that company in 1908 and secretary and a director three years later. When the St. Louis Smelting and Refining Works was established as a branch of National Lead Company in 1918, he was made assistant manager. He was named director of National Lead Company in 1928 and manager of the St. Louis branch in 1937.

In addition to being a director and branch manager at the time of his death, Mr. Caselton was also general manager of the National Pigment and Chemical Division of National Lead Company, secretary and treasurer of the Combined Metals Reduction Company, and first vice president of the St. Louis Smelting and Refining Company.

Mr. Caselton received wide recognition in recent years for his fight against the "silicosis racket" in the lead district. He proved that many workers supposedly suffering from silicosis were actually participating in a fraudulent scheme promoted by a group of unethical St. Louis lawyers. The investigation resulted in the suspension of several attorneys by the St. Louis Bar Association, and there has been a marked decrease in the number of suits filed since.

JULIUS H. WARNER, well known consulting mining engineer, died in Denver February 5 of burns he suffered January 2 when he fell into a pit of boiling water at a mine he was inspecting near Rollinsville, Colo. Mr. Warner went to Denver 18 years ago from Butte, Mont., where he had also been engaged in mining engineering work.

JAMES J. WARREN, president of the Consolidated Mining and Smelting Company, Trail, B. C., died January 28 at the age of 68, while he was at his winter home at Southern Pines, N. C. Death was due to a heart attack.



MANUFACTURERS' Forum

Sales Changes of American Chain and Cable Co.

American Chain & Cable Company, Inc., announces that R. E. Greenwood has been appointed district sales manager of the Chicago territory of the American Chain Division, with headquarters at 400 West Madison Street, Chicago, Ill.—succeeding G. B. Kutz, who has been transferred to York, Pa., as assistant to the general manager of sales, American Chain Division.

R. C. Brenizer has been appointed Philadelphia district sales manager of the American Chain Division, with headquarters at Second and Diamond Streets, Philadelphia, Pa.—succeeding R. E. Greenwood, transferred to Chicago.

Power Take-Off Compressor Mounting

To fill the requirements of a special field, Worthington Pump and Machinery Corporation, Harrison, N. J., has developed a portable air compressor with power take-off drive. Consisting essentially of a Worthington compressor driven through a Worthington multi-V-drive by a Hercules drive unit installed between the truck transmission and the front universal joint of the propeller shaft, the new unit combines maximum portability with utilization of a minimum of truck pay-load space.

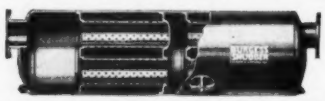
The compressor is the three-cylinder two-stage radial air-cooled type used on the standard Worthington portable mountings, and includes many modern features of construction: the improved feather valve, ring-type fins, large sectional type intercooler, articulated connecting rods, force-feed lubrication, and by-pass unloading.

A new bulletin illustrating various applications of the new mounting, with complete specifications, has been issued. Write for Bulletin H-850-B55.

Intake and Exhaust Quieting

A totally new type of noise-quieting device which is non-acoustic and can be placed at any point in the intake or exhaust system of an engine or compressor, has recently been developed by the Acoustic Division of the Burgess Battery Company, 500 W. Huron Street, Chicago. Since it eliminates the cause of noise produced by the pulsating gases by snubbing the peak velocities and pressures and thereby produces a smooth flow of gas, this new device is called the Burgess Snubber.

The same type of unit is applicable to intake and output lines of reciprocating and rotary compressors. Bur-



gess Snubbers are available in a wide range of sizes for standard, heavy duty, and spark arresting service.

Protecto-Shield

Willson Products, Inc., 278 Thorn Street, Reading, Pa., announces a new Protecto-Shield for guarding face of workers in light grinding operations, woodworking, spot welding, and other occupations where protection is desirable.

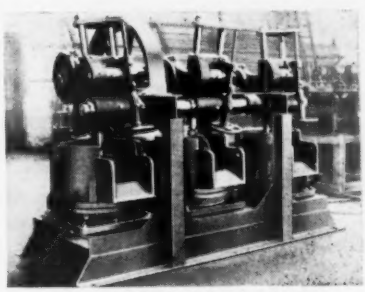
The Willson Protecto-Shield permits clear vision in all directions. It is made of thick, transparent cellulose acetate, is well ventilated, and large enough to fit comfortably over correction spectacles. The shield extends well back along the sides of the face. It is easily thrown back when not in use. A special Willson knitted sweat pad provides unusual comfort. It is so light in weight that workers have no objection to wearing it.

The adjustable molded rubber headband and all other parts are easily replaceable. Shield may be had in clear, amber, or green transparent cellulose. The manufacturer will gladly furnish complete information, literature, and prices on request.

Adjustable Stroke Diaphram Pump

The Denver Equipment Company announces a 5 in. x 6 in. Diaphragm Pump with a stroke which can be adjusted while the pump is running. This unit is similar to their other types in principle and this new pump is built particularly for large installations as the 6-inch pump has a capacity of 1,000 tons of pulp per 24 hours.

Denver Adjustable Stroke Diaphragm pumps give ease and simplicity of control; the quick change of pump stroke, easily made while pump is running gives close control of the volume discharge. This volume control means direct density regulation when pumping from a thickener.



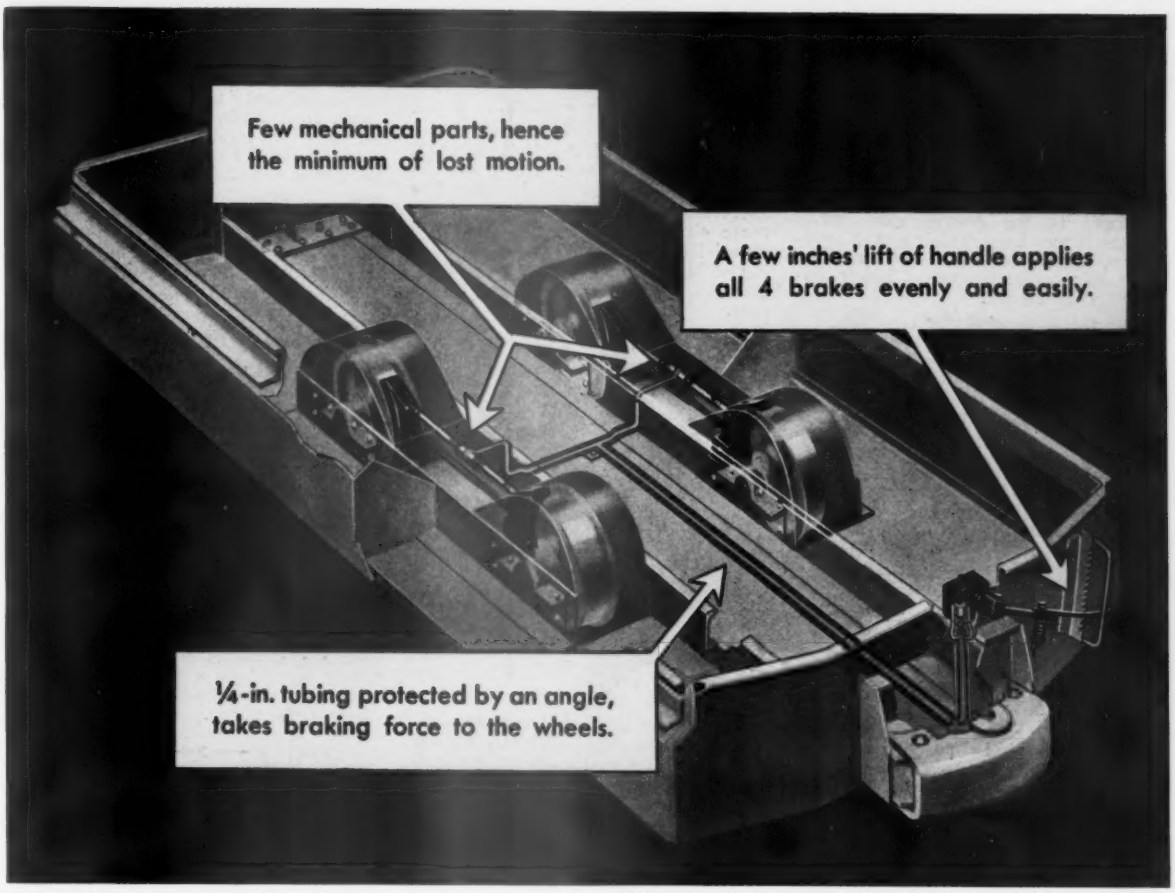
An accessible hand wheel places a 100 percent variation in pump capacity at the fingertips of the operator. While the appearance of this new pump differs radically from the smaller units, the operating principles are identical.

Experienced operators know that reduced costs result where a single machine unit can replace several smaller ones required for the same work. This 5-inch and 6-inch pump has the capacity of triplex or quadruplex 4-inch pumps which at present are the largest size now in common use. Here again three or four sets of mechanisms, diaphragms, valves, etc., can be replaced by one set of parts designed and built for a heavy duty job.

Speedy Air Shipment

Facing a partial shut-down because of a broken-down crusher, a gold mine down in remote Nicaragua recently wired the Allis-Chalmers Manufacturing Company, Milwaukee, Wis., for a 2,050-lb. part with which to repair the temporarily-idle machine.

Moving in on the job immediately on receipt of the wire, Allis-Chalmers shipped the part the same day, expressing it by railway to Miami, Fla. At Miami the part was rushed from


Few mechanical parts, hence the minimum of lost motion.
A few inches' lift of handle applies all 4 brakes evenly and easily.
¼-in. tubing protected by an angle, takes braking force to the wheels.

HYDRAULIC BRAKES HAVE NO EQUAL

for quick, smooth stops

THE new Bethlehem Hydraulic Brake can be built into new mine cars or applied to existing cars. It takes up no more space than two or three pounds of coal. It is simple in design, rugged in construction, and has stopping power that can't be equalled by any other type of brake. And it holds—for example, one mine found that the Bethlehem Hydraulic Brake held a loaded 4-ton car on a 15-per-cent grade for more than 175 hours.

Springs keep brake shoes clear of the wheels, so that the shoes never drag. A hydraulic, not mechanical, system transmits the braking force—hence wear and lost motion are at the minimum. A letter to Bethlehem Steel Co., Bethlehem, Pa., will bring you further data, including price information and the names of mines now using this brake.

BETHLEHEM STEEL COMPANY

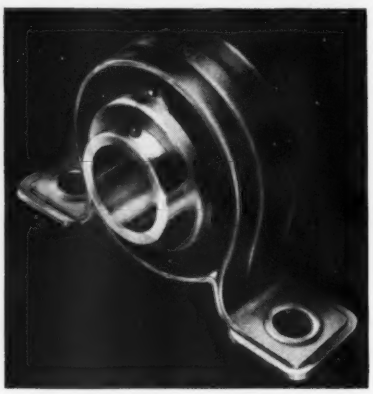
railroad station to airport, where a specially-chartered transport plane was waiting. Taking off with the crusher part safely loaded in its cabin, the plane speedily flew its one-ton cargo over the Gulf of Mexico to Managua, Nicaragua.

From Managua the cargo was trucked to the nearby gold mine, where it was immediately put in operation, climaxing one of the speediest long-distance shipments of heavy machinery on record.

Rubberflex Pillow Block

In answer to the widespread demand for a compact, sound-insulated pillow block, S K F Industries, Inc., Front Street and Erie Avenue, Philadelphia, is introducing the new "Rubberflex" pillow block, the result of more than two years' research.

This new unit comprises a self-locking bearing of the "Grip-lock" type. This bearing is inherently aligning, thus compensating for inaccuracies of set-up and conditions



of shaft misalignment without binding or in any way impairing the load-carrying capacity of the bearing. In addition, the use of this unit brings about manufacturing economies because it requires no machining of the shaft.

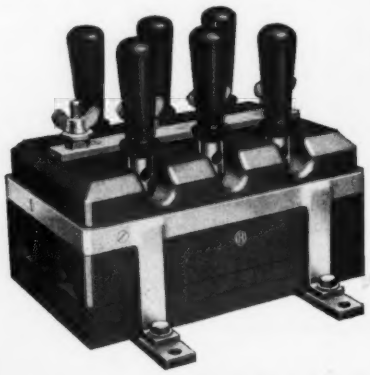
The bearing is encased in a pressed steel housing equipped with felt seals to exclude dirt. The housing is provided with means for lubricating the bearing. The bearing and housing are surrounded with an elastic material having special sound-absorbing characteristics, and the material has been specially treated to make it impervious to oil and grease.

Free from the objectionable vibration usually associated with rubber mountings, this unit carries substantial loads under practically all operating conditions. Its unit construction facilitates mounting.

The "Rubberflex" pillow block constitutes a rugged, inexpensive unit which has wide application in those fields requiring anti-friction bearings with unusually quiet operating characteristics. These units are first being released in the ¾-inch and 1-inch shaft sizes, and are obtainable through more than 800 S K F representatives located in all parts of the United States.

Cable Connection Device

The Ohio Brass Company, Mansfield, Ohio, announces a new cable connection device, the O-B Type A multiple junction box. Simple in design and operation, this junction box facilitates the connection of one to three circuits with power off. It is especially designed for handling trailing cable connections from cutting, drilling, and loading machines at the face.

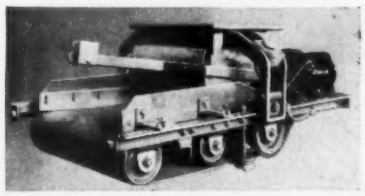


The body of the junction box is constructed of impregnated wood. Feeder cable inlet and outlet are at one end. Cable ends are accommodated by adjustable clamps within the body of the box. A combination galvanized malleable iron clamping band and mounting arrangement locks the two sections of the box together after connection of the feeder cable.

Trailing cables from machines are inserted into rubber-handled phosphor-bronze plugs and locked tightly into position by a turn of the rubber handle. When connection is desired the plug body, split for a tight wedge fit, is inserted into its proper hole in the junction box. For 250 to 600 volts d.c.

Improved Constant Weight Feeder

Meeting users' needs, Hardinge Company, Inc., York, Pa., has announced an important improvement in the Constant Weight Feeder, which permits the use of 440 and 550-volt motors and gear motors on the feeder frame,



itself, without resorting to separate transformers previously required, because of the flexibility of the connections employed.

This new connection consists of an unusually flexible armored casing which meets underwriter's requirements. The change simplifies the feeder and reduces costs in cases where higher voltage motors are desired.

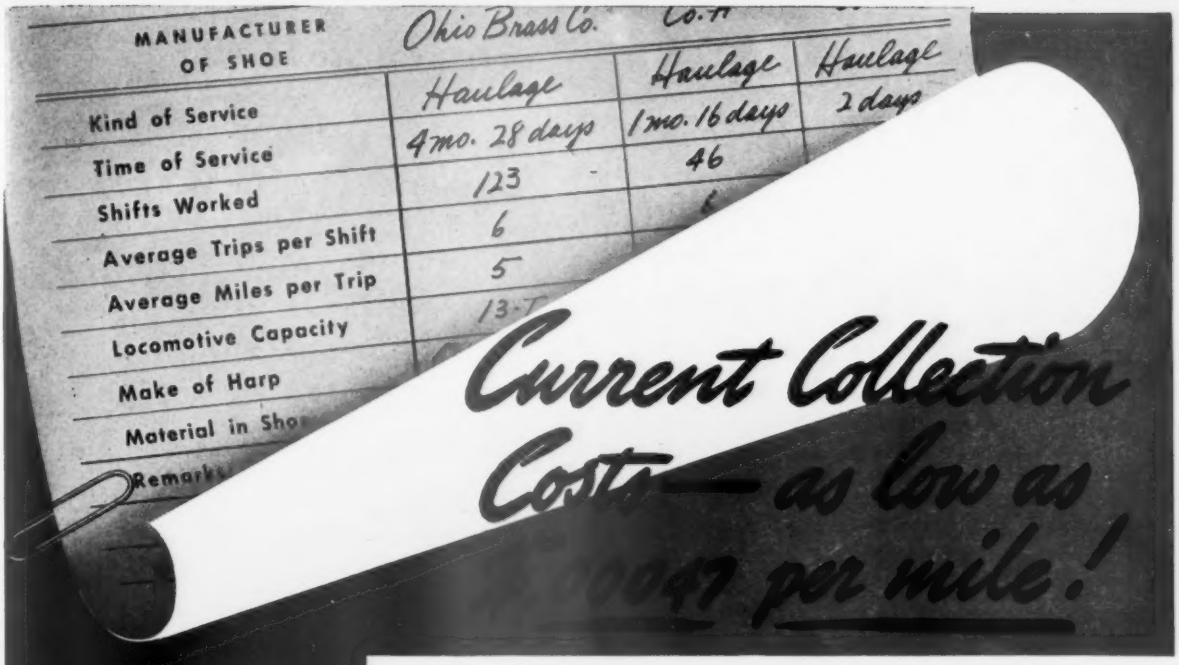
Other improvements made increase the accuracy of the feeder in handling coarse materials. Recent reports of this feeder show a variation of less than ½ of 1 percent in weight, when feeding ⅝-in. ore.

Strip Heaters

A new line of strip heaters for operation at sheath temperatures as high as 1200 deg. F. has been announced by General Electric. The new heaters are enclosed in porcelain-enamel steel casings so that they have the additional advantage of resisting rust and corrosion.

Not only are these new heaters more attractive in appearance than the conventional high-temperature strip heaters made with alloy-steel sheaths, but their first cost is lower.

New Sargent Overhead Shovel, a tractor attachment for moving earth or similar material or for loading coal or snow. By the addition of an interchangeable group of comparatively inexpensive accessories, a standard crawler tractor, with a single operator, has the versatility of several separate machines. Pictured above is the shovel moving a large boulder with Up and Down Pressure Bulldozer attached. Maine Steel, Inc., South Portland, Me., is the manufacturer.



Little more than a penny per shift! That was the actual cost record of this long-lived O-B Heavy-Duty Trolley Shoe under gruelling main haulage service conditions in one Ohio mine! Mighty economical current collection under any condition, it's typical of O-B Wheel and Shoe performance.

Varying haulage conditions, current conditions and wire conditions make the life of a current collector an uncertain thing at best. But you can always be sure of one thing! —The correct design and manufacturing uniformity of O-B current collection equipment will give you the best results under any set of conditions! O-B Locomotive Equipment gets the most out of your motor!

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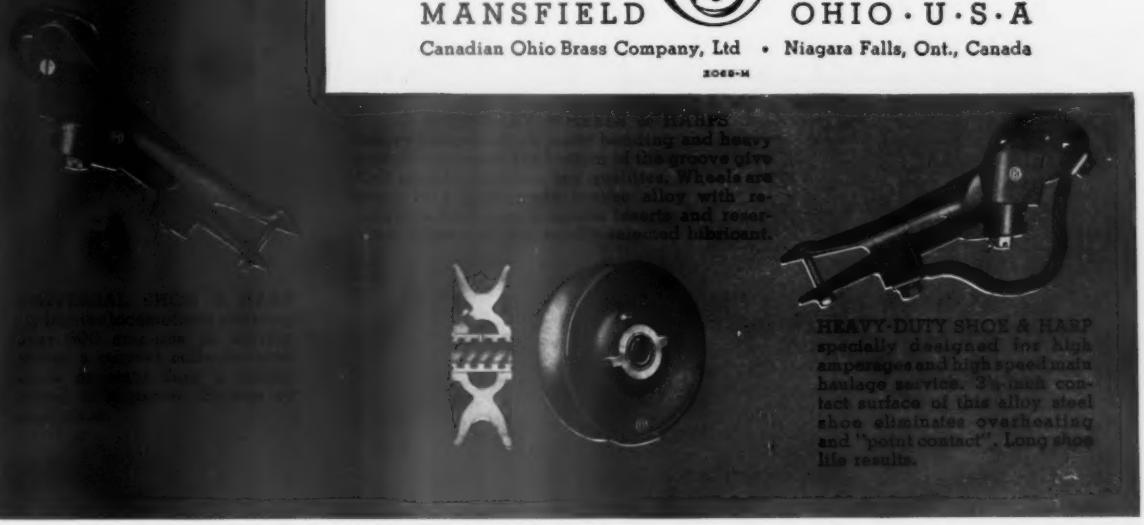


HEAVY-DUTY SHOE & HARP specially designed for high amperages and high speed main haulage service. 3½-inch contact surface of this alloy steel shoe eliminates overheating and "point contact". Long shoe life results.

TO ECONOMIZE

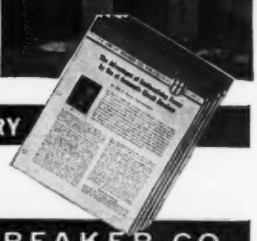
SECTIONALIZE with

AUTOMATIC RECLOSING CIRCUIT BREAKERS

Raise production; reduce fire hazard; lower maintenance charges; decrease total energy consumption and power demand. These advantages with Automatic Reclosing Circuit Breakers are fully described in I-T-E bulletins based on actual installations in mines.

At right—Each circuit breaker controls a section, confining disturbances to the area in which they arise.

Representatives in Principal Mining Areas



BULLETINS TELL THE STORY

These bulletins deal with a variety of mining conditions. Copies will be gladly furnished on request.

I-T-E CIRCUIT BREAKER CO.
PHILADELPHIA, PA.

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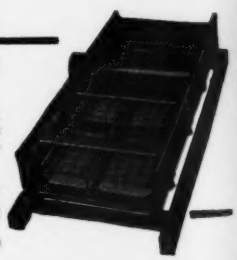
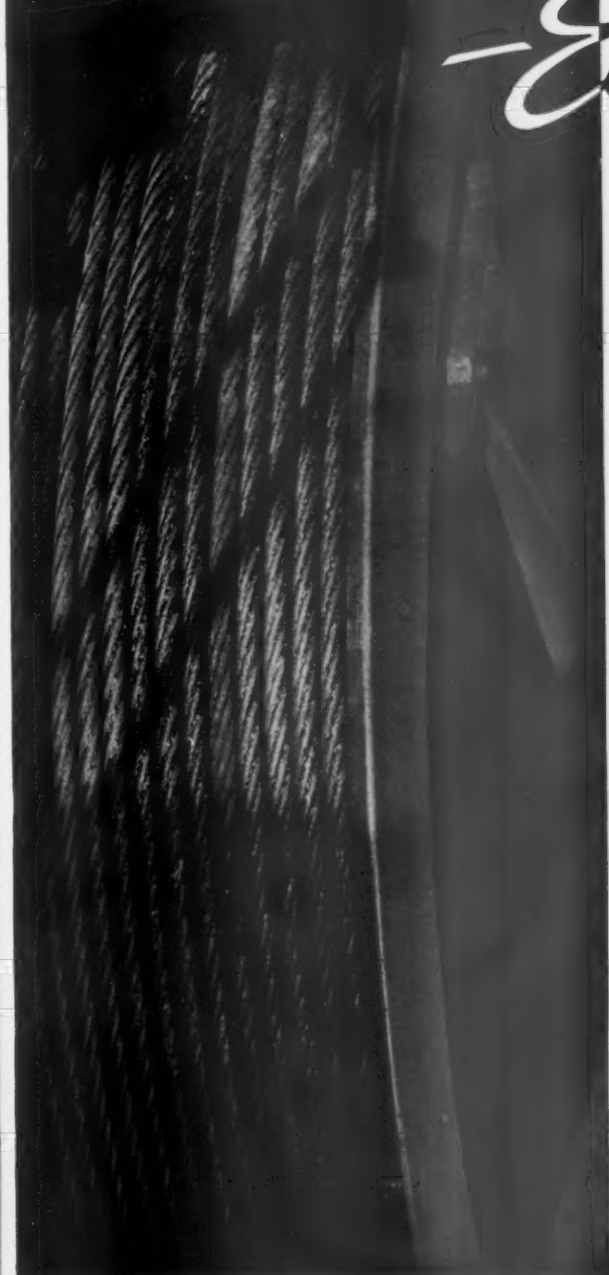


LAY·SET *Preformed* WIRE ROPE

—*Economizer*



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Wherever it is necessary to have economy of operation, increased service from machinery, greater speed of production, or increased safety to workmen—there LAY-SET Preformed Wire Rope is most appreciated.

● Hazard LAY-SET is the all-around economizer because it is most carefully preformed. Before the strands in LAY-SET Wire Rope are finally assembled they are preformed to the exact helical curve they must assume in the finished rope.

● But the preforming process does far more than put all strands in perfect balance. It makes LAY-SET more flexible, limber—easier to handle. It bends around drums and sheaves easily; spools tightly under any load; has remarkable resistance to fatigue. LAY-SET Preformed resists kinking; may be spliced easier and with more certainty. Obviously, LAY-SET Preformed lasts longer—gives greater dollar value.

BUY ACCO QUALITY *whether for Hazard Wire Ropes —American Chains (Weed Tire Chains—Welded or Weldless Chain)—Campbell Abrasive Cutting Machines —Page Chain Link Fence—Page Welding Wire—Reading-Pratt & Cady Valves—Wright Hoists or any other of the 137 ACCO Quality Products.*

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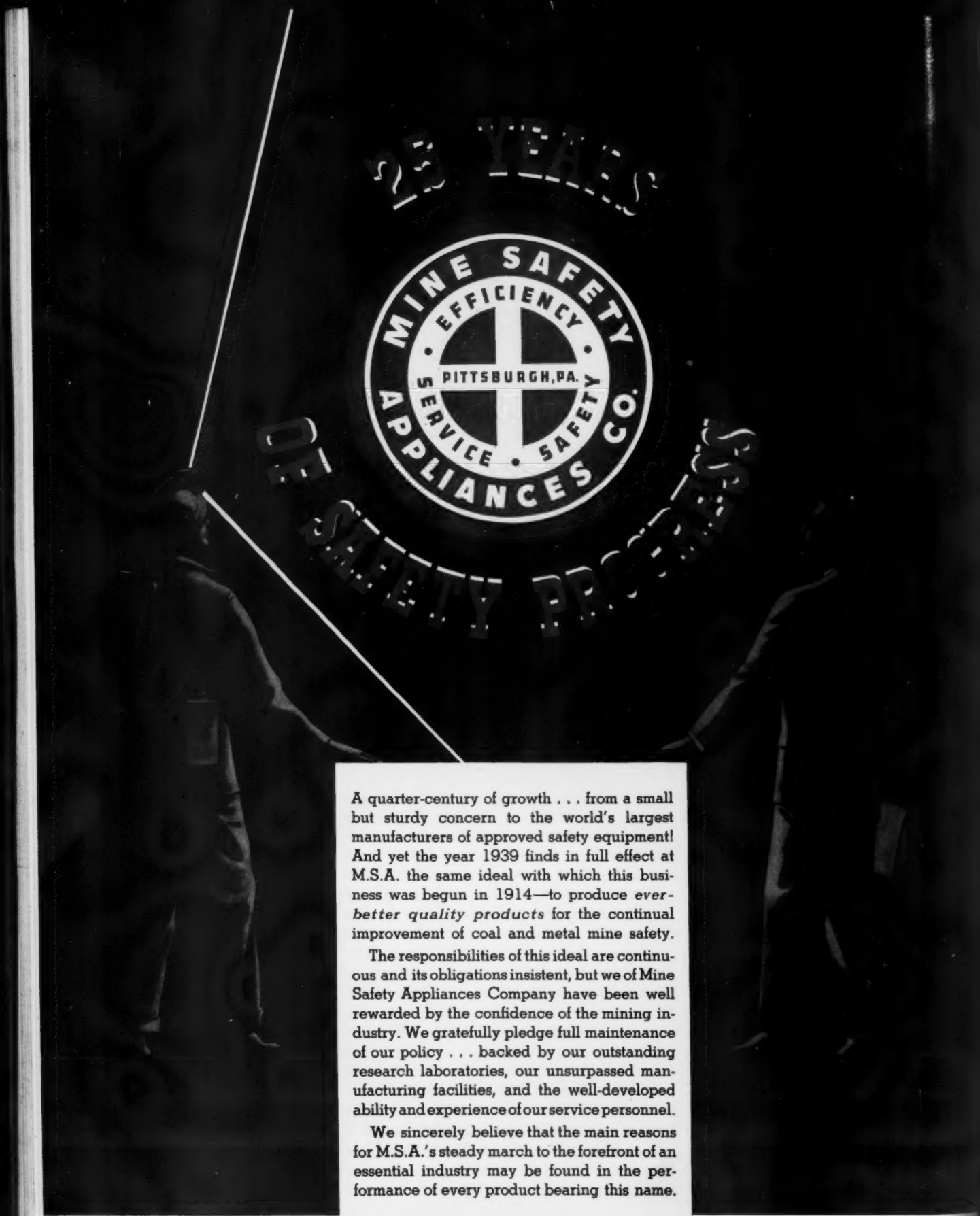

A quarter-century of growth . . . from a small but sturdy concern to the world's largest manufacturers of approved safety equipment! And yet the year 1939 finds in full effect at M.S.A. the same ideal with which this business was begun in 1914—to produce *ever-better quality products* for the continual improvement of coal and metal mine safety.

The responsibilities of this ideal are continuous and its obligations insistent, but we of Mine Safety Appliances Company have been well rewarded by the confidence of the mining industry. We gratefully pledge full maintenance of our policy . . . backed by our outstanding research laboratories, our unsurpassed manufacturing facilities, and the well-developed ability and experience of our service personnel.

We sincerely believe that the main reasons for M.S.A.'s steady march to the forefront of an essential industry may be found in the performance of every product bearing this name.

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